



AUTHORWARE

Multimedia





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Multimedia

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Authorware, Inc.

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Preface

Congratulations on your purchase of *Authorware Professional*! Key to the state-of-the-art elements that make *Authorware Professional* the best development system you can buy are its multimedia capabilities. Three icons — Sound, Movie, Video — make it possible for you to easily create realistic simulations using engaging media.

There is terrific power and flexibility in each icon, yet the concepts for the use of each remain constant. You'll find these capabilities are simple and easy to use and, as you gain experience with them, you'll be able to create more exciting interactive environments!

This manual assumes you are already familiar with use of the Macintosh™ and Authorware. If this isn't the case, please refer to the Macintosh manual and the *Authorware Professional* manual before proceeding.

Digitized Sound

The Digitized Sound feature of *Authorware Professional* includes the Sound icon, the SoundWave™ software, and the sound-digitizing hardware you can use to record and edit sounds.

Chapter 1 introduces the Sound icon and its options for loading sounds and controlling their playback. Chapter 2 describes how to record sounds of your own using the Sound Digitizer and save them in sound files. Chapter 3 serves as a reference guide for the SoundWave™ application.

Movies

The Movie features provided with *Authorware Professional* include the Movie icon and the Movie Editor software which enables you to create and edit movies for use with the Movie icon. With these features you can illustrate concepts and procedures realistically and intrigue your users with effective animated reinforcement.

Chapter 1 introduces the Movie icon and its options, and illustrates its use in Authorware. The remainder describes use of the Movie Editor software in creating movies. Chapter 2 gives a brief overview of the Movie Editor windows and menus. Chapter 3 contains a short tutorial to help you get the Movie Editor application started and run it through its paces. Chapter 4 serves as a reference manual with detailed descriptions of Movie Editor features.

Video

The Video Interface features provided with *Authorware Professional* include the Video icon and support for several video players. The video icon can be placed anywhere within your file to control an attached video player and direct the playback of video segments and their sound tracks.

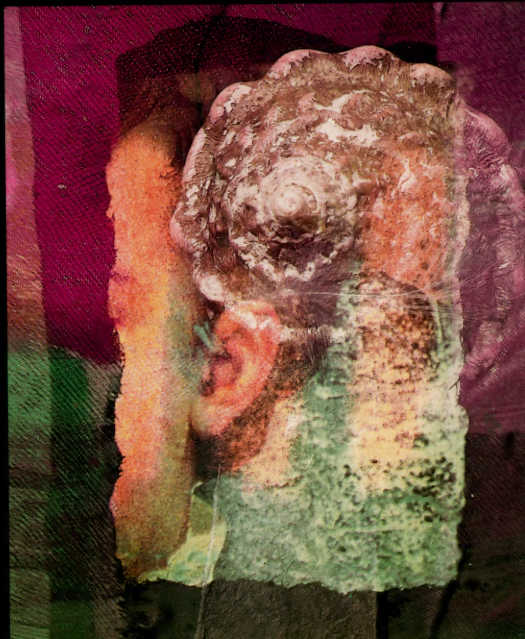
Chapter 1 introduces the Video icon and its options. It describes using the video controller, specifying the playback parameters, and building in user-control of the video segments.

Support is provided for Pioneer LDV-4200 and LDV-6000, McDonnell Douglas LaserFilm, Panasonic TQ2026F and TQ2027F and SONY 1000 series players at the time of this printing.



AUTHORWARE

Sound



Chapter 1. The Sound Icon

- **Capabilities**

Sound icons allow you to use a large variety of sounds in the applications you design. Recorded speech, music, and sound effects can become interesting and effective components. You can place Sound icons anywhere in your file and adjust the sound playback to your needs. Use of sound opens a whole new way of communicating with your users!

- **Options**

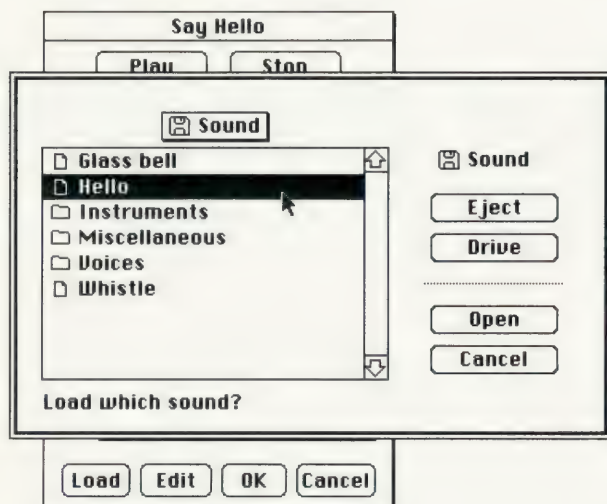
To get started, open a file in which you would like to include use of sound.



Choose the location on the flow line at which you wish a sound to be played. Then simply drag a Sound icon from the palette of design icons to the chosen location. When you release the mouse button, a Sound icon named “Untitled” will be added to the flow line and highlighted.

Title the newly placed icon in the usual way (see “Titling Icons” in Chapter 3. of the *Authorware Professional Reference* manual).

Double-click the titled Sound icon to open it, and two more windows will appear on your screen. The top window (i.e., the “Load” window) asks you to choose which sound file should be opened and used here. Select the file containing the sound that suits your purposes and double-click its name or click the “Open” pushbutton.



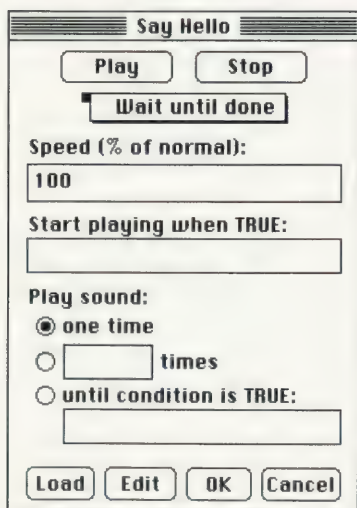
When you click “Open”, the Load window will close and you will see the Sound icon options window. This window provides options to control how your sound is used in *Authorware*.

First, click “Play” to play back the sound you have loaded. If it isn’t the correct one, click “Load” to open the Load window and choose a different sound.

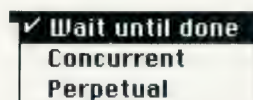
“Stop” is a companion to Play. You can click it to halt playback of a sound.

Speed (% of normal):

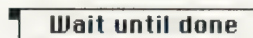
100



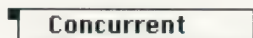
The “Speed (% of normal):” slot allows you to leave the playback speed at its normal value (i.e., 100%) or choose another rate expressed as a per cent of the normal speed. Values less than 100% play slower and values greater than 100% play faster than the sound as it is stored in the sound file. You can enter a number (e.g., 125) or a variable (e.g., “rate”) in the slot to control the speed of playback.



A pop-up menu is provided with options for controlling concurrent presentation activities.



If you choose “Wait until done,” *Authorware* will suspend the running of your file until the sound is done playing. No subsequent icons will be presented until the sound playback has finished.



If you choose “Concurrent,” your sound will begin playing when the Sound icon is encountered, and *Authorware* will continue to present subsequent icons while the sound plays. This feature is especially useful for playing a sound to accompany an action on your screen.

Perpetual

As with “Concurrent”, the “Perpetual” option presents the following icons while the sound is playing. In addition, if you choose “Perpetual,” the sound can be activated or its speed changed through subsequent changes in the values of variables named in the slots for “Start playing when TRUE:” and “Speed (% of normal);” respectively.

For example, with “Perpetual” selected, you can cause the sound to play whenever the value of the variable or expression in the “Start playing when TRUE:” slot changes from FALSE to TRUE. Similarly, you can change playback speed by altering the value of the entry in the Speed slot.

The “**Play sound:**” options tell *Authorware* how many times to play the sound. The default selection is to play the sound “one time.” You can specify multiple repetitions by selecting the “__ times” option and entering a number or a variable in the slot. You can also specify that the sound should play repeatedly by selecting the “until condition is TRUE:” option and entering a condition in the slot.

Play sound:

☒ one time

☐ times

☐ until condition is TRUE:

OK

When you have selected the options you desire, click “OK.” The Sound icon options window will close, and you can use “Run” or “Run from flag” (**Try it** menu) to see if your sound is working the way you wish.

- **Making changes**

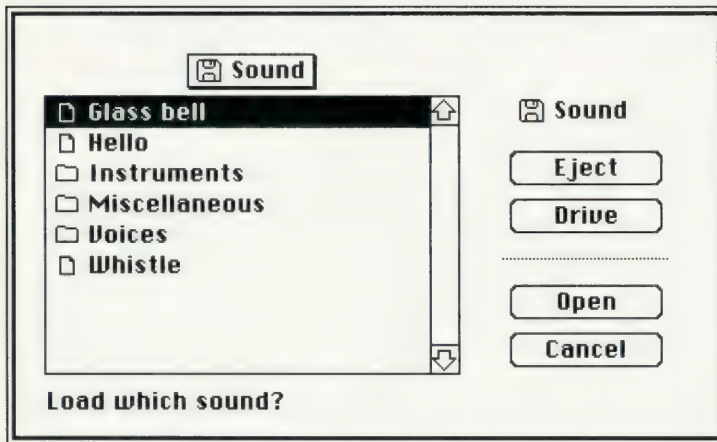
If you want to make changes, simply open the Sound icon and choose different settings in the options window.

Substituting sounds

To substitute a different sound be sure that the sound you want has already been recorded and resides in a sound file on a disk. If it does, all you need to do is load the replacement sound. If it does not, you must first create the new sound and save it in a sound file using the procedures discussed in “Recording a sound” and “SoundWave Reference” later in this manual.

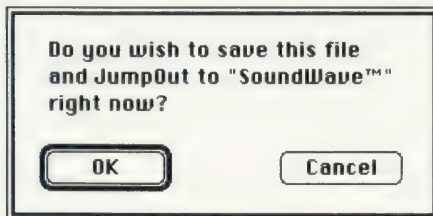
Load

Double-click the icon for the sound you want to replace. The Sound icon options window should then appear. Click the “Load” pushbutton to activate the Load window.



Now, select the sound file you want to load and double-click or click “Open.” The newly-selected sound will load into your file and replace the previous sound.

Editing the sound

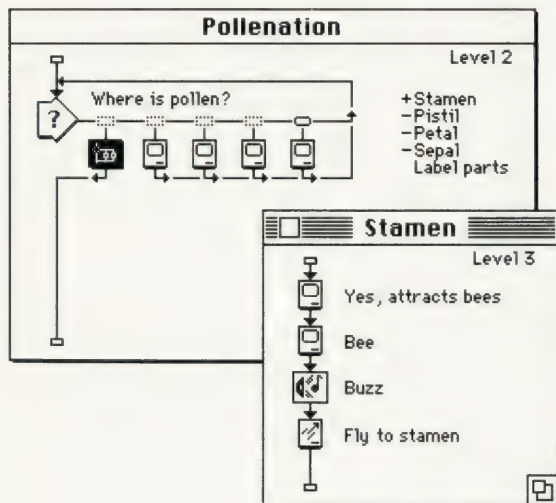
Edit

You can access the SoundWave™ application from the Sound icon options window in order to edit the currently-loaded sound file. To edit the sound, open the options window by double-clicking the appropriate Sound icon (if it is not already open), and click the “Edit” pushbutton. You will be asked to confirm whether you wish to save the file and complete the jumpout or to cancel the operation. Choosing “OK” at this point saves the file to disk and executes the jumpout to SoundWave with the currently-loaded sound file attached.

Use SoundWave features to make edits to the sound (see *Section 1, Chapter 3. Multimedia Reference* manual for details). When you are finished, choose “Quit” from the SoundWave File menu, and you will be returned to *Authorware* at the point at which you left.

• Example

A set of sample SoundWave sound files is included on the Sound disk. You can use these sounds in your application or create your own sounds to meet a particular instructional need.



In the file design windows shown here, the Map icon "Stamen" is attached to the Interaction icon "Where is pollen?" as a correct answer. Map "Stamen" includes a Sound icon "Buzz" as part of the feedback. When the user matches this response, the feedback icons are presented to the user.

The Sound icon "Buzz" is set to play concurrently with the Animation icon that follows it. Since the "Buzz" sound is rather short, the developer has set it to play five times so the sound will continue to play during the time that the "Bee" is being animated.

The screenshot shows the configuration window for the "Buzz" sound icon. It has a title bar "Buzz". Inside, there are two buttons: "Play" and "Stop". Below them is a button labeled "Concurrent". Under "Speed (% of normal):", there is a text field containing "100". Below that is a section "Start playing when TRUE:" with an empty text field. The "Play sound:" section has three radio buttons: "one time", "5 times" (which is selected), and "until condition is TRUE:". Below the "5 times" option is another empty text field. At the bottom are four buttons: "Load", "Edit", "OK", and "Cancel".

Chapter 2. Using the Digitizer

- **Digitized Sound option package**

The sound digitizer with the cable for connecting it to your Macintosh™ is in the box labeled “Sound Digitizer”. A disk containing the SoundWave software along with a small library of sound files is in the Authorware Software booklet. Depending upon which kind of hardware you have, the package also may contain a separate microphone and power transformer. If any of these items is missing, contact Authorware, Inc. immediately.

Sound digitizer

The sound digitizer is essential for recording and digitizing sounds that you want to store for later use. The digitizer is designed to be used with the SoundWave software. Its features and their use are described in later sections.

SoundWave software

The SoundWave software application is the link between the Macintosh and your sound digitizer. It can also be used without the digitizer to load, play, modify, and save sounds. (The digitizer is needed only to record sounds.)

Library of sound files

Included on the Sound disk is a small set of sample pre-recorded sound files. These can be accessed and played or modified with SoundWave or loaded into a through use of a Sound icon.

Manual

This manual is your guide to the Digitized Sound option for *Authorware*. It assumes that you know how to use your Macintosh and that you understand the basics of developing applications with *Authorware*.

Other items you may need

Your sound digitizer comes with an internal microphone (some have a separate microphone) for use in recording your sounds. You may, however, want to use a different source such as a tape recorder. If so, you will need to plug this device into your digitizer in the line jack. If you need an adapter for your recorder, the jack on the digitizer is a standard jack that should be available at most electronics stores.

- **Hooking up the digitizer**

In order to hook up the sound digitizer, follow the simple steps listed below.

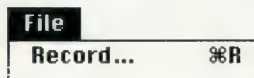
- ☐ 1. Make sure your Macintosh is turned off. It is good practice to turn off your Macintosh before connecting any peripheral.
- ☐ 2. Plug the digitizer connector cable into either the modem port or the printer port on the back of your Macintosh.
- ☐ 3. If your digitizer requires an external microphone, plug the mike into the “MIC” jack on the digitizer. If you want to use a different sound source, plug it into the “LINE” jack on the front of the digitizer.
- ☐ 4. If your digitizer requires an external power pack, plug the power cord from the transformer into the back of the digitizer, and plug the other end into a 110V-120V AC power outlet.
- ☐ 5. Turn on the digitizer, if necessary, and turn on your Macintosh.

- ❑ 6. Insert the Sound disk. In accordance with the license agreement, you may make a single working copy of the Sound disk or copy the SoundWave application and the library of sound files to your hard disk. Set the original Sound disk aside for safekeeping.

Your digitizer should now be fully installed and ready for recording.

• Recording a sound

Open SoundWave as you would any other Macintosh application. Double-click the SoundWave icon or select the icon and choose “Open...” from the File menu. When opened in this manner, the initial screen shows only **File** and **Edit** menu titles in the menu bar.



To get started, pull down the File menu and choose “Record...” The record options window will appear.



- ❑ Set the sampling rate for the recording you want to make.

Technical background: The digitizer converts the analog sound input into a digital representation. Sounds are converted to a series of numbers, each stored in one 8-bit byte. The smallest nonnegative integer that can be stored in a byte is 0, and the largest is 255. (These values correspond to $2^0 - 1$ and $2^8 - 1$, respectively.) Because of this limitation, the numerical representation of the sound's amplitude at each sampled instant of time is restricted to between 0 and 255, inclusive.

Your choice of sampling rate establishes how many times per second a numerical value for the sound's amplitude will be stored. The higher the frequency of sampling, the more storage is required.

As indicated, a sampling rate of 22 kiloHertz (kHz) provides the best quality of recording, but requires the most computer and disk memory, and a rate of 5.5 kHz requires the least memory but provides the least sound quality. This range of sampling rates allows you to balance the parameters of sound quality and disk space required to best fit your situation. Choose the level you want by clicking the corresponding radio button on the screen. With experimentation and practice you will learn which settings work best to achieve particular effects. For now, choose any of the sampling rates and experiment with the others later.

- ☐ Choose the icon for the port in which the digitizer is connected.

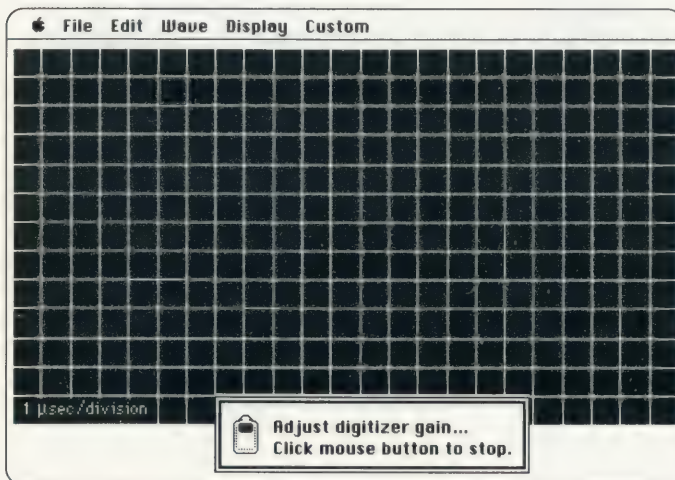
If your digitizer is connected to the modem port on the back of the Macintosh, click the modem icon so that it is highlighted. If the digitizer is plugged into the printer port, click that icon.

- ☐ Adjust the “gain” or “volume” on the digitizer.

This is analogous to setting the recording level. The control on the front or side of the digitizer serves as the “gain” or “volume” control. On some digitizers, this control also controls the power. Your digitizer may need to be switched on by turning the control clockwise. On

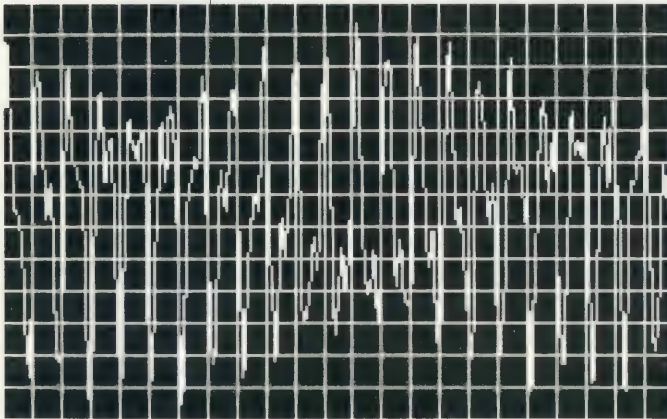
some digitizers a light will indicate whether the digitizer has been switched on (it should appear red). Turn the “gain” at least halfway to the right and click the “Scope” pushbutton to activate the Scope window.

The Scope window displays a graphical representation of input to the digitizer. If you plan to use the microphone as your input source, speak into it. You will see the waveform of the sound of your voice on the screen. If you are using a different sound source, turn it on.

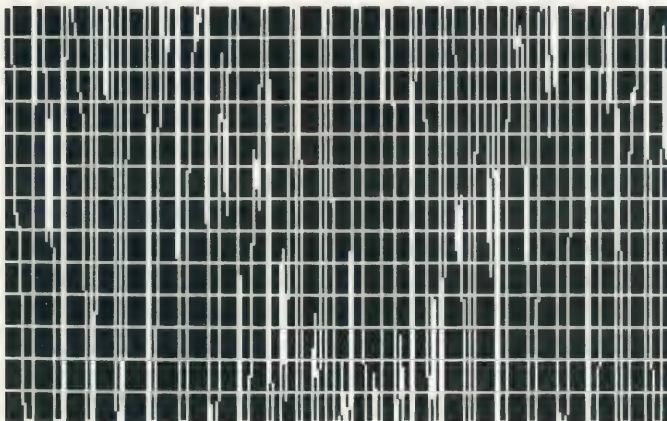


The waveform of that sound will appear on the screen. Nothing is being recorded or saved, but this representation of your sound input allows you to set the gain. If your digitizer has a light, it will show green while the digitizer is processing your sound input.

"Adjusted" sound



Turn the gain control up (clockwise) and down (counterclockwise) to change the amplitude of the waveform on the Scope display. If the amplitude of the waveform is increased so far that it extends off the screen at the top or bottom, you are experiencing "clipping." Clipping refers to the truncation of that part of the sound which extends past the top and bottom of the display. Because only amplitude values between 0 and 255 can be stored with SoundWave, turning the gain too high causes extreme amplitude values to be rounded off to 0 (at the bottom of the display) or 255 (at the top of the display). To avoid distortion due to clipping, adjust the gain so that no sound waves are clipped, but the largest waves just fill the display in the Scope window.



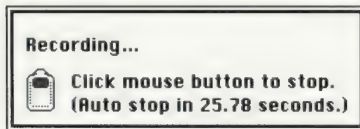
"Clipped" sound

You can listen to the sound source (e.g., a tape recorder) while using the Scope window. First use the "Play Options..." command in the **Edit** menu and mark the "Play while scoping" checkbox. Then activate the Scope window via the "Record..." command in the **File** menu. (See "Play Options..." *Section 1, Chapter 3* in this manual for details.)

Once you have the gain adjusted properly, click the mouse button to return to the "Record..." options.

- ❑ Click the “Record” pushbutton to begin recording.

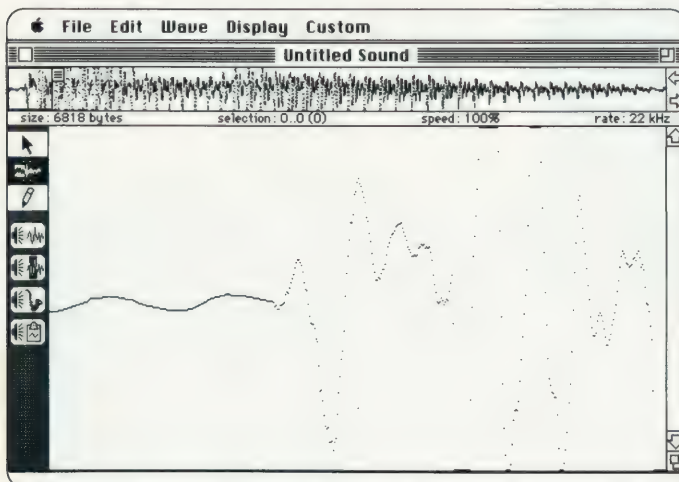
Recording begins immediately when you click “Record”. You should be ready to provide your sound source right away, or you may end up with an unwanted period of silence at the beginning of your recording. This is usually not a difficult problem, because you can use SoundWave options to edit out the silences. However, if your sound is long in duration and approaches the limit of your computer’s memory capacity, you could run out of memory without having recorded the last portion of the sound. It is a good practice to start your sound immediately when recording begins.



While recording, a “Recording...” message is displayed. (If your digitizer has a light it will show green during recording.)

- ❑ Click the mouse button to stop recording.

If you continue to record until all available computer memory is used up, SoundWave will automatically stop recording.



When you finish recording, the SoundWave “Sound window” is displayed with the waveform of your recorded sound.

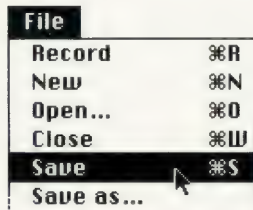


You can play the entire sound you have recorded by clicking the pushbutton in the palette of tools at the left of the Sound window.

If you are not entirely satisfied with the result, you can: 1) record the sound again (by first saving the recorded sound to a sound file to free up computer memory and repeating the steps given above), or 2) modify the sound or its playback by using

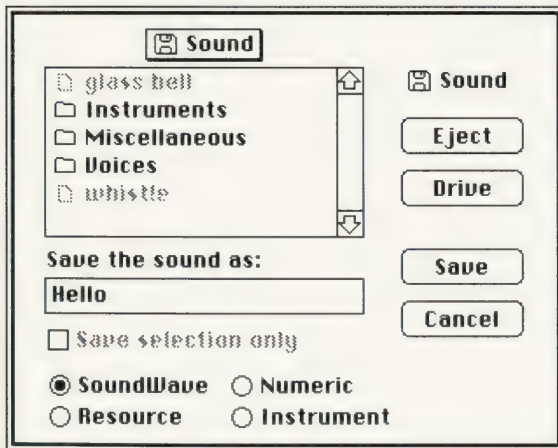
some of the many sound editing features provided with SoundWave (discussed in *Chapter 2, Section 3. Multimedia Reference*).

- **Saving a sound to a sound file**



When you are ready to save your recorded sound to your disk, choose “Save” from the **File** menu.

If you have not previously saved the file, the “Save” options window will appear on your screen. When it does, specify the name to be used for the sound file and the disk/folder to which it should be saved, and click “OK.”



The options for specifying file type and saving a selection (i.e., a sound segment from the sound file) are described in *Section 2, Chapter 3.* in this manual (see “Save” and “Save as...”).

Chapter 3. SoundWave Reference

- **SoundWave capabilities**

SoundWave provides a variety of tools for working with sounds. You can listen to a recorded sound (either the entire sound file or a selected part of it), cut or copy and paste a selected sound segment, mix sound segments from the same or different sound files, set volume, speed, and direction of playback, selectively amplify frequency bands with filter controls, incorporate echo and delay effects, and fade a sound in or out with amplification controls.

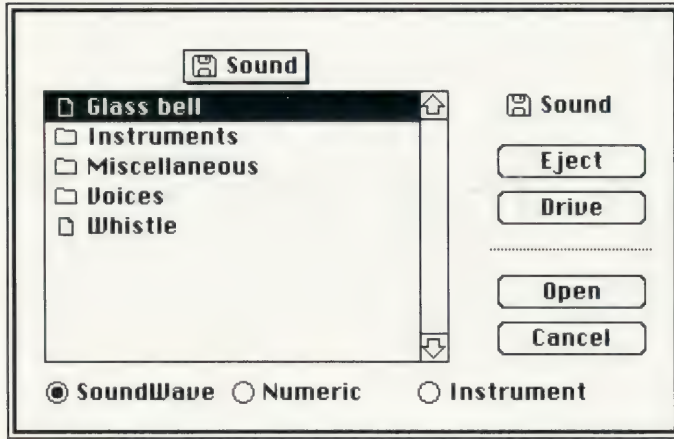
- **Chapter organization**

This Chapter describes all the SoundWave features. It begins first with the two types of windows, Sound windows and Spectrum windows, and then discusses each of the menus and their commands.

- **Sound windows**

Opening a Sound window

Sound windows are displayed when you finish recording a sound (see *Chapter 2. Using the digitizer*) or when you open an existing sound file.

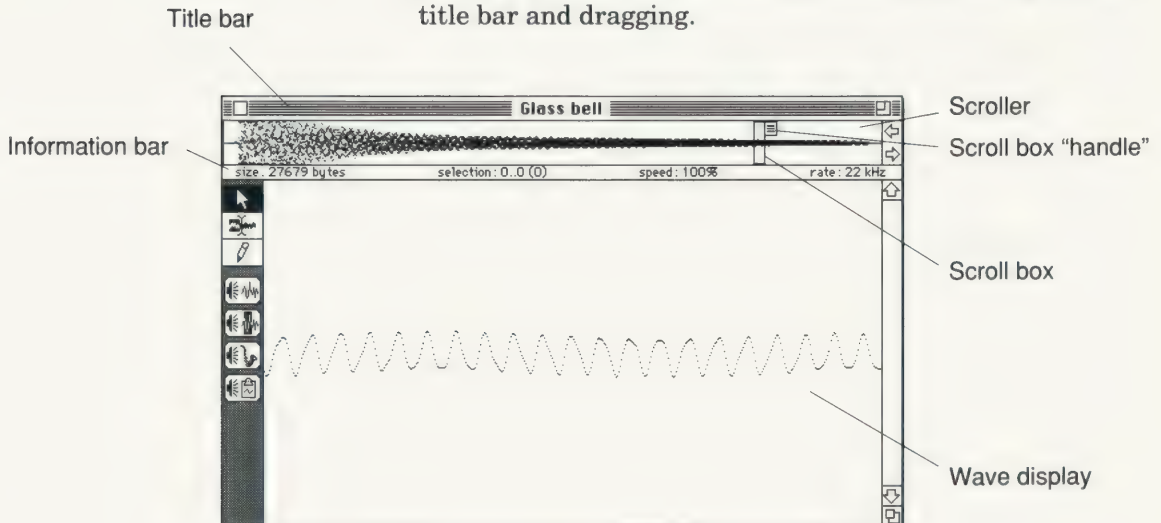


To open a sound file, you can either: 1) double-click its icon on the Macintosh desktop display, or 2) open the SoundWave application and use the “Open...” command in the **File** menu.

You can work with up to four sounds at once, each shown in its own Sound window. If you have multiple windows open, you can select one to be active or place them in tiled or stacked arrangements with commands in the **Display** menu (see “Display menu” later in this Section).

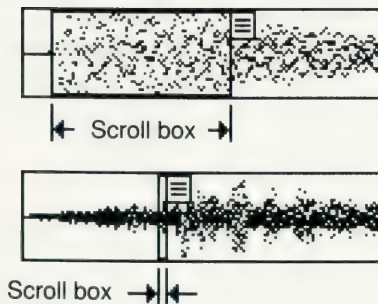
Components of the Sound window

Sound windows are similar to most Macintosh windows. The title bar displays the name of an open sound file, and it includes the usual close box and zoom box. A resizing box appears in the lower right-hand corner, and a scroll bar is provided at the right-hand edge. If desired, you can move a Sound window to a new screen location by clicking in the title bar and dragging.



The Sound window also contains some additional features. In particular, it displays **two different representations** of your sound's waveform:

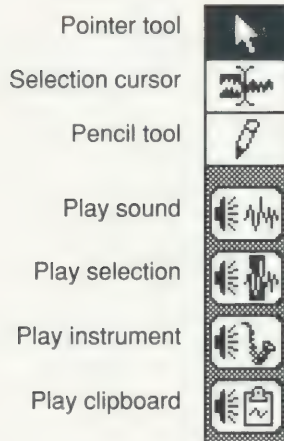
1. The long, narrow rectangle at the top of the screen is called the **Scroller**. Inside is a compressed waveform representation of the entire contents of the sound file. It includes a "**Scroll box**" which can be scrolled back and forth through the sound file to locate a segment to view in greater detail. There is a **handle** attached to the Scroll box: the small striped square. Scrolling can be done by dragging the Scroll box (or its handle) or by using the **Scroll arrows** at the right-hand end of the Scroller.
2. The larger rectangle at the bottom is called the **Wave display**. It displays an enlarged waveform for only that portion of the sound file which is enclosed by the Scroll box in the Scroller. Each byte of sound, stored as a number from 0 to 255, is shown as a single dot.



The size of the Scroll box is in proportion to the amount of the sound file that can be displayed in the Wave display. For small sound files, the Scroll box appears fairly large, because a large proportion of the total sound can be displayed in the Wave display. For large sound files, the Wave display can only display a small subset of the entire sound. In these cases, the Scroll box is shown in a smaller size (perhaps only as a line) to indicate the smaller proportion of the full sound displayed at the bottom.

Below the Scroller is the **Information bar**. It shows, for the sound displayed in the Sound window, the size of the sound in bytes, the location and length of any currently selected sound segment (i.e., the **selection**), the playback speed, and the sampling rate. This information is discussed later in this Section.

• Tools



At the left of the Sound window is a palette of Tool Icons and Play Buttons you can use to work with sounds.

The top three icons—representing the Pointer, the Selection cursor, and the Pencil—change the function of the cursor. Clicking a tool icon highlights it and changes the shape of the cursor to the chosen tool.



The **Pointer** is used to scroll, select menu commands, and choose options.



The second tool, the **Selection cursor**, is used to select a segment of the sound in the file for manipulation. Similar to other Macintosh applications, SoundWave allows you to perform various operations on selected items (e.g., selected sound segments). Use the Selection cursor to make a selection of sound, in either the Scroller or the Wave display.

To select a segment of your sound file, choose the Selection cursor from the palette and click at the beginning or end of the sound segment. If you are selecting in the Wave display, scroll the sound file until the desired segment is displayed. Select the segment either by 1) dragging the selection cursor across the waveform, or 2) clicking at one end and Shift-clicking at the other to select all the information in between. The selected segment will be highlighted in black.

Special features for selecting sound include the following:

- Clicking and dragging off the left or right edge of the Wave display causes the display to scroll.
- Shift-click selects the area between the Shift-click and the original click.
- Command-H moves the left edge of the selection one byte to the left.

- **Command-J** moves the left edge of the selection one byte to the right.
- **Command-K** moves the right edge of the selection one byte to the left.
- **Command-L** moves the right edge of the selection one byte to the right.

The scroller serves two purposes: scrolling and selecting. So, while the program is in selection mode (i.e., while a sound segment is selected and appears highlighted in the Sound window), only the following options are available for scrolling:

- Dragging the Scroll box by its handle
- Use of the Scroll Arrows
- Scrolling by dragging off the left or right edge of the screen
- **Command-B** scrolls to the beginning of the selection.
- **Command-E** scrolls to the end of the selection.



The **Pencil tool** can be used to make minor modifications to the sound by drawing in the Wave display. You can't draw on the compressed wave shown in the Scroller, but you can scroll with the Pencil as well as with the Pointer.

Play buttons

The bottom four icons at the left of the Sound window are pushbuttons for initiating sound playback.



The function of the Play Sound button is to play the entire sound in the sound file.



The Play Selection pushbutton is used to play the selected sound segment (i.e., that portion of the sound file you have selected with the Selection cursor) or the entire sound if no sound segment is selected.



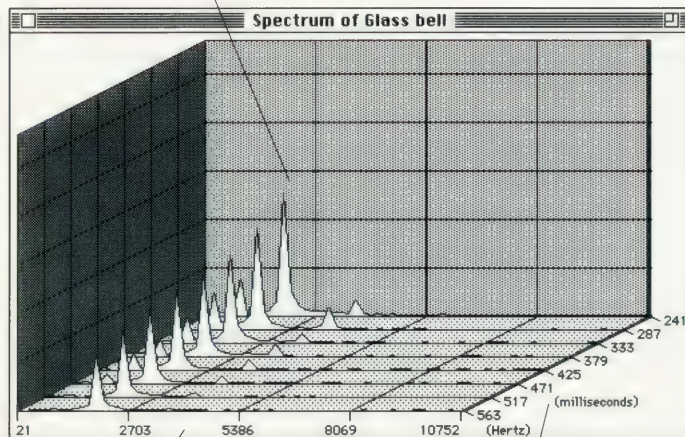
The Play Instrument pushbutton plays the sound as a Studio Session™ instrument if the current situation allows. Studio Session, a product of Bogas Productions, is a music editor and player (not provided).



The Play Clipboard button is used to play the sound segment contained on the Sound clipboard, if any.

• Spectrum windows

Vertical axis (shows amplitude of each frequency)



Horizontal axis (shows frequency in Hertz)

Diagonal axis (shows time in milliseconds at beginning of each 1K slice)

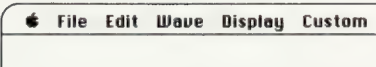
A Spectrum window shows the amplitude of frequencies in a series of 1K segments of sound. You can create Spectrum windows for the entire sound or a selected segment using the “Spectrum...” command in the **Display** menu. Up to four Spectrum windows may be open at once. The contents of the Spectrum window may be printed or copied to the Clipboard to be pasted into another application. Spectrum windows may not be loaded or saved.

The frequency range displayed is controlled in the Spectrum options window (“Spectrum” in **Display** menu).

Although Spectrum windows don’t have a resizing box, they may be resized by dragging the lower right-hand corner of the window, just as if a resizing box were shown.

• **Menus**

While a sound file is open (i.e., the Sound window appears on the screen), SoundWave displays the following menus in the menu bar:



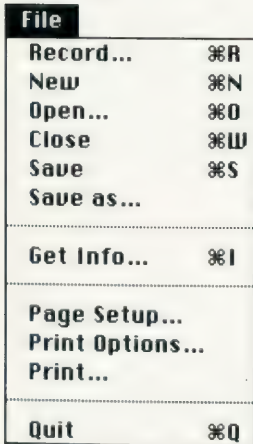
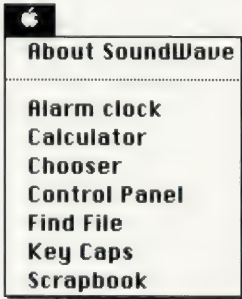
The menus and their commands are each discussed in turn in the following sections.

Apple menu

Under the **Apple** menu, the “About SoundWave...” command displays a banner with information about Authorware, Inc. and the amount of free memory in the Macintosh.

File menu

The **File** menu commands enable you to perform a number of file-related operations. Many of the commands are similar in function to those used in other Macintosh applications, and some are unique to SoundWave.



Record...



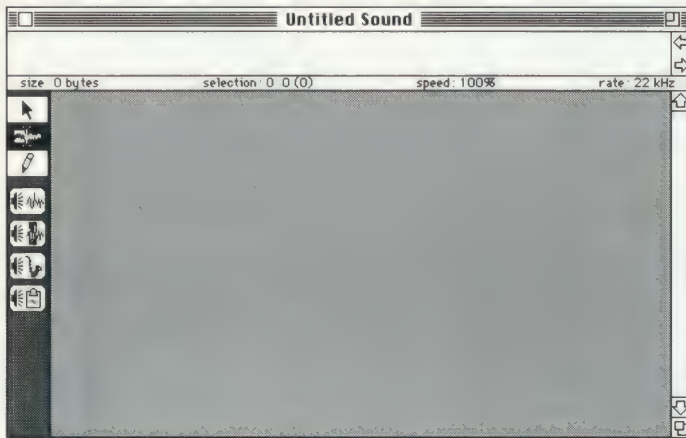
“Record...” provides access to controls for setting the gain on the digitizer and for recording a sound.

Use the “Record” options window to set the sampling rate and digitizer port before recording. You should also check the Scope display to adjust the digitizer gain. Clicking the “Record” button will record the digitizer’s input to a new Sound window. The options window indicates how much sound can be recorded based on the amount of memory available and

the sampling rate selected. Once recording has begun, it will continue until memory is used up or you click the mouse.

Record is like a “New” command in most applications. Once the sound is recorded, it is displayed in a new Sound window. **You do not need to open a new Sound window before recording, nor can you record into a window that is already open.**

See “Recording a sound” in *Chapter 2. Using the Digitizer* for a step-by-step description of the recording procedure.



New

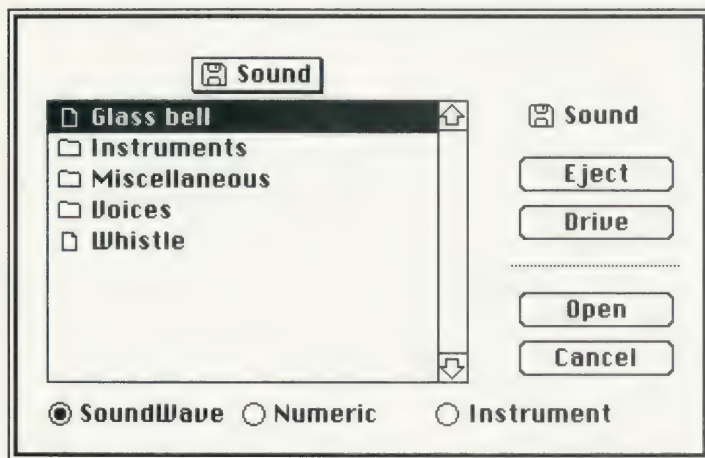
“New” creates an empty Sound window, ready for you to paste into. Normally, you will create a new window using Record, but sometimes you will want to create a new, empty window to paste parts of sounds into later. For example, there is a **Custom** menu command “Tone Generator” that can create sound in a window without using “Record...” Also, you may choose to paste a sound segment copied to the Sound clipboard from an existing Sound file

into a newly created file.

Open...

You can open three different file types from SoundWave: standard SoundWave files, SoundWave’s numeric files, and Studio Session instruments. Clicking the buttons at the bottom of the options window determines what type of files to list in the window.

Only the standard (i.e., default) **SoundWave** file type is used for *Authorware* Sound icons.



The **numeric** files are text files containing a list of the byte values in a sound. They are used for communicating between SoundWave and a spreadsheet program, BASIC, or other programs that read and write text files. With this button selected, all text files will be shown as available in the list, but only those that are made up of numbers separated by Returns, line feeds, commas, or spaces will make any sense to SoundWave. Text files containing other characters will not be loaded.

Studio Session **instrument** files usually contain recordings of musical instruments.

Close

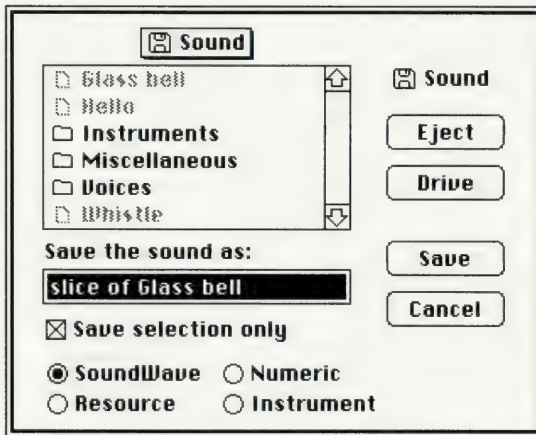
“Close” closes the active window. If it is a Sound window and you have made changes since you last saved, SoundWave will ask if you want to save before closing.

Save

“Save” saves the active Sound file in standard SoundWave format (which is the format required for *Authorware* Sound icons). To choose a different format or save under a different name or directory, use “Save as...”. If the window title is *Untitled Sound*, “Save” will ask you for a file name.

Save as...

“Save as...” provides the option of specifying the file type to be used. The four buttons at the bottom of the options window identify the options:



The **SoundWave** type is required by the Sound icon in *Authorware*.

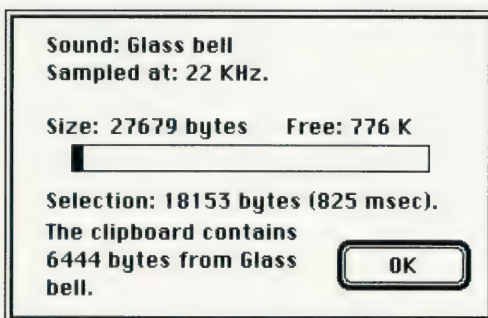
Resource creates a file that cannot be loaded by SoundWave but is useful to programmers who want to put sound into their own applications.

Numeric creates a text file containing a list of the byte values of the sound, with each byte separated by a Return. Files of this type can be read by spreadsheet applications, text editors, BASIC programs, and many other programs. Numeric type files enable programmers to manipulate the numeric representation of sounds in many ways that aren't provided for in

SoundWave.

Instrument allows you to save a sound for use with the Studio Session music editor and player.

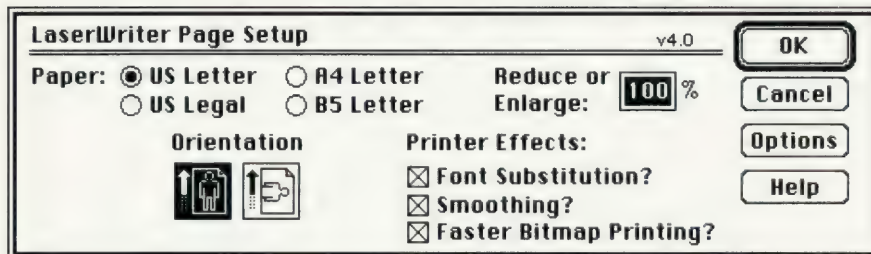
You also have the option of saving a selected sound segment rather than the entire file. Choosing "Save as..." with a segment selected activates the "Save selection only" checkbox. If you click this option, only the selected segment will be saved to the file whose name you provide.



Get Info...

"Get Info..." displays the title of the active Sound window, the sampling rate used for recording, the sound's size in relation to free memory, the amount of memory free, the length of the selected sound segment (if any), and the contents of the Sound clipboard.

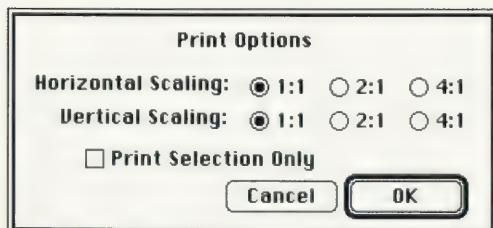
Page Setup...



“Page Setup...” opens the standard Macintosh print style options window, allowing you to set page orientation and special effects for your printer such as scaling, smoothing,

font substitution, and so on. Not all printers will have all the special effects options. If you have more than one printer accessible to your Macintosh, use the Chooser desk accessory to select the printer you want to use and then use “Page Setup...”.

Print Options...



The “Print Options...” window provides options specific to printing SoundWave files:

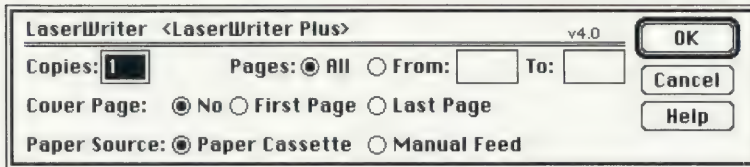
The scaling options allow you to adjust the level of detail in the printout and, thereby, to control the amount of sound printed per page. Selecting 1:1 both for horizontal and vertical scaling will result in a printout at the same scale as is shown on the screen.

Selecting 4:1 for both settings allows you to print sixteen times as much sound per page. If you check the “Print Selection Only” box, SoundWave will print only that sound segment which you have selected with the Selection cursor.

Print...

“Print...” from the **File** menu activates the print options for your printer, allowing you to print from the active window—either a Sound window or a Spectrum window. Selecting the desired applicable options and clicking “OK” causes printing to begin.

One of the options that appears on the print options window for most printers allows you to print the whole document



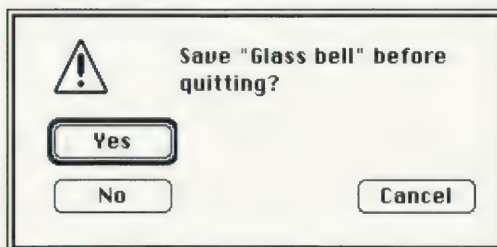
(All) or to specify what pages to print (From... To...). This option applies better to page oriented programs than it does to SoundWave. In SoundWave, pagination is determined only at print time, so it would be

hard to know what you are printing if you set this to anything other than "All." **If you want to print only part of a sound**, you should select the sound segment with the Selection cursor and then check "Print Selection Only" in the "Print Options..." window.

If you print with an ImageWriter™ printer, there is a Print Quality option in the "Print Options..." window. The choices are Best, Faster, and Draft. Draft printing, however, only applies to text printing and should not be used for printing SoundWave documents or Spectrum windows.

When you have the settings adjusted for printing, click the "OK" button. Be prepared to wait for several minutes while SoundWave converts your sound to print format. Nothing may happen on your printer or screen during this time. Once printing begins, the process may take a long time because of the high level of detail to be printed.

Quit



When you use the "Quit" command in SoundWave, you will be asked whether you wish to save any changes made to open sound files. Click "Yes" to save changes, "No" to quit without saving changes, or "Cancel" to exit from the Quit operation.

Edit	
Undo	⌘Z
Cut	⌘H
Copy	⌘C
Paste	⌘V
Clear	
Mix...	
Play Options...	⌘P
Studio Options...	
Select All	⌘A
Show Beginning	⌘B
Show End	⌘E

- **Edit menu**

Undo

SoundWave will let you undo the last change you made to the the sound if the “Undo” command is active. Undo will appear dimmed if there was not enough memory to buffer the original sound or if you bring a different window to the front.

Cut

“Cut” removes the selected portion of the sound and puts it on SoundWave’s private Sound clipboard. The contents of the **Sound clipboard** can’t be pasted into a desk accessory or other application documents.

Copy

If the active window is a Sound window, “Copy” will duplicate the selected segment and put it on its private Sound clipboard.

If the active window is a Spectrum window, “Copy” will put the picture of the spectrum on the standard Macintosh Clipboard. You can then paste it into desk accessories or other application documents. Copying the spectrum picture doesn’t erase the private Sound clipboard.

Paste

If there is sound on the Sound clipboard, you can paste it into a Sound window. The clipboard sound will replace a sound selection. If there is no selection, the clipboard sound will be pasted in at the insertion point.



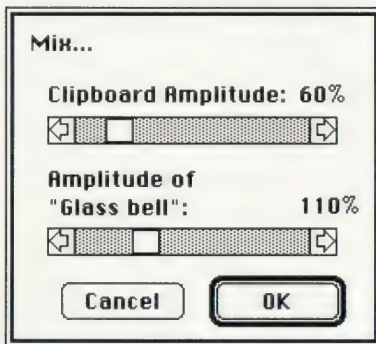
You can paste a Sound clipboard sound into whatever sound file you wish. Use the “Open...” or “New” commands in the **File** menu to open the file. If the target file is already open, you can select it by using the **Display** menu.

Clear

To eliminate a selected sound segment completely, you can use the “Clear” command or press the Backspace key. The contents of the Sound clipboard are unaffected by use of “Clear” or Backspace.

Mix...

You can mix the sound on the Sound clipboard with one in a Sound window. Mixing will blend the sounds together, starting at the insertion point and continuing for the duration of the clipboard sound.



To mix one sound segment with another, follow the instructions above to “Cut” or “Copy” a selected sound to the Sound clipboard and select an insertion point with the Selection cursor. Then, instead of pasting the clipboard sound, choose “Mix...” from the **Edit** menu.

An options window will appear with controls for adjusting the amplitude of the sounds on the Sound clipboard and in the sound file. You can change the amplitudes, if desired, by scrolling the two amplitude bars. This allows you to decrease the volume of one sound and make it a background to the other. When you are done adjusting, click the “OK” button to mix the sounds. The “mixed” segment of the sound file will be highlighted.



It is advisable to check immediately the effect of mixing by clicking the Play Selection pushbutton. If it is not satisfactory, you can undo the mix by choosing “Undo” from the Edit menu.



CAUTION If you do other edits immediately after mixing, the “Undo” option may no longer be available. If you are unable to use “Undo,” you may still revert to the previously saved version of the sound file by using “Close” in the File menu and electing not to save recent changes.

If you are mixing sounds from two different sound files, the two should be recorded at the same sampling rate; otherwise, you can expect bizarre-sounding results from mixing.

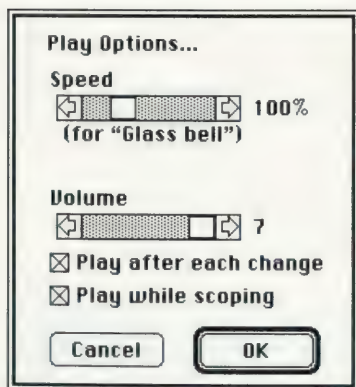
You can check the sampling rate used to record a sound file, by activating one sound file window (using the **Display** menu) and noting the sampling rate shown in the Information bar.

size: 27679 bytes	selection: 0..27679 (27679)	speed: 100%	rate: 22 kHz
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Activate the second sound file window and check its sampling rate. If they're not the same, you will either have to resample your sounds (using "Resample" from the **Wave** menu) or re-record them using the same sampling rate for each sound to be mixed.

Play Options...

The "Play Options..." command in the **Edit** menu allows you to set four options for the playback of your sound.



Speed
 100%

Playback speed can be set to play sound faster or slower than normal (100%) by scrolling the Speed bar.

The selected speed is saved with your sound file. Note that you can also control the playback speed in *Authorware* Sound icons with the speed slot provided in its options window (see "Options" in *Chapter 1. Sound Icon*).

Volume
 7

You can set the volume control for your sound by scrolling in the Volume bar. This volume setting is

independent of the setting on your Macintosh Control Panel so that you can have a low level for the Macintosh beep, and a high one for your sound.

☒ **Play after each change** If “Play after each change” is checked, sounds will be played immediately after each change you make to them. This is a convenience so that you can assess the effects of each change immediately without having to click a sound playback button every time.

☒ **Play while scoping** If you check the “Play while scoping” box, SoundWave will play the sound that shows on the scope display (see “Recording a sound” in *Chapter 2. Using the digitizer*). The feature is convenient if your sound source is a radio or tape recorder so that you can hear what input the scope is receiving.



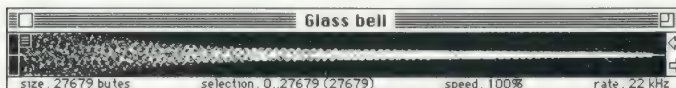
NOTE When two or more Sound windows are open, the settings chosen in “Play Options...” will affect only the active Sound window, and they will be saved with that window.

Studio Options...

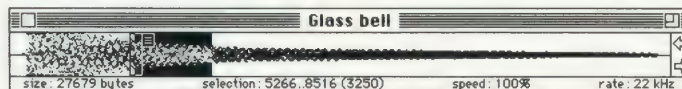
Information specified in the “Studio Options...” window affects the way sounds are played as instruments.

Select All

“Select All” selects the entire active sound.

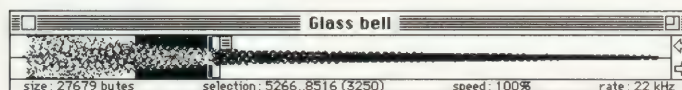


Show Beginning

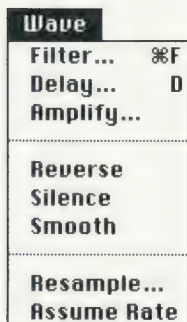


“Show Beginning” moves the Scroll box to the beginning of the selected sound segment.

Show End



“Show End” moves the Scroll box to the end of the selected sound segment.

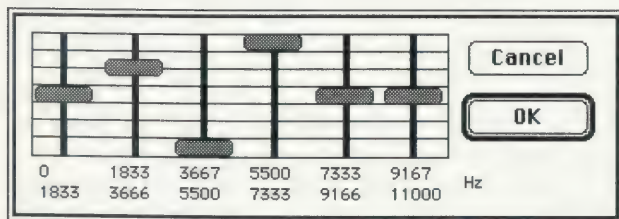


• Wave menu

The commands in the **Wave** menu enable you to achieve special effects with your sounds by modifying the waveform. Most of them **require** a selection. That is, they are only active when you have selected a sound segment.

Filter...

You can modify your selected sound segment with SoundWave’s digital filter by choosing “Filter...” from the **Wave** menu. It looks like a graphic equalizer used with some stereo sound systems, and it works in much the same way. Each slider is like a volume control for the frequency band listed below it. Each frequency band can be amplified from 0% to 200%.



When “Filter...” is first chosen for a selected sound segment, each filter is in the neutral position in the middle of its vertical range of movement. When the slider for a frequency range is in its neutral position, amplification for its frequency range is the same as (i.e., 100% of) the value

at which it was recorded. Moving a slider upward increases amplification of its associated frequency range, while moving the slider downward decreases its amplification (i.e., it filters out its associated frequency range). Each slider can change effective amplification upward to as much as 200% or downward to as little as zero.

In the example shown, the slider on the left is in its neutral position and won't alter the 0-1833 Hz frequency range. The second slider will amplify the 1833-3666 Hz range by 150%. The third will eliminate the 3667-5500 Hz range by setting its amplification to zero. The fourth will amplify the 5500-7333 Hz range by 200%. The fifth and sixth filters are in the neutral position, and don't affect the 7300-11000 Hz frequencies.

Once you set the sliders to the desired levels, click "OK" to filter the sound.

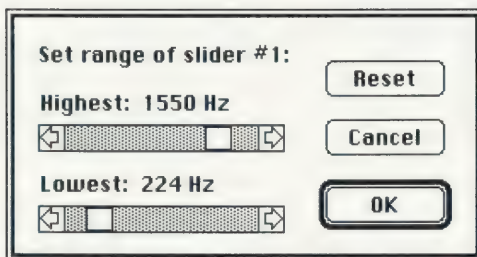
Filtering is a time-consuming process. It can take over a minute to filter each 1000 bytes of sound selected.

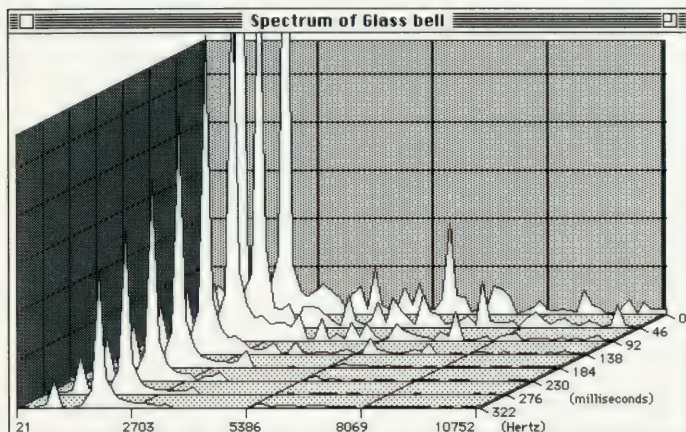


The frequency settings for the filter are adjustable in case you need to control different frequency bands than the standard ones used. **To change the frequency range of a slider**, double-click the slider to get a new options window.

Simply scroll the boxes for the upper and lower end of the ranges and click "OK." The Reset button is used to reset the slider to its original, default frequency range.

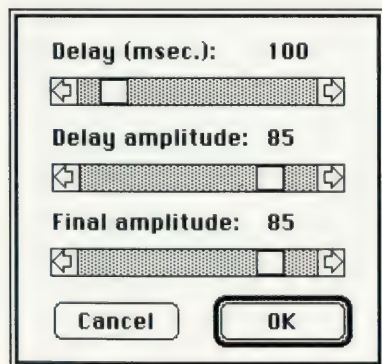
When you're done filtering, you can play back your sound selection or open the Spectrum window ("Spectrum..." in **Display** menu) to see graphically the effects of your filtering.





Spectrum of "Glass bell" as modified by "Filter" (**Wave** menu) using filter slider positions as shown above. Compare to unfiltered Spectrum of "Glass bell" under "Spectrum windows" earlier in this Section.

Delay...

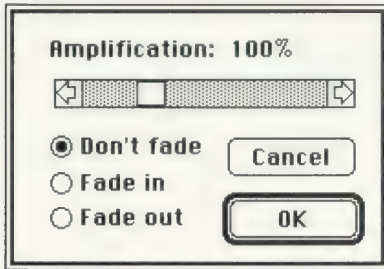


You can delay a selected sound to create an echo effect and other interesting effects which are best discovered by experimentation. A delayed sound is mixed with itself automatically after being delayed, according to your specifications in the "Delay..." options window. To delay a sound, choose "Delay..." from the **Wave** menu.

The delay time is the amount of time that passes between the beginning of the original sound and the beginning of the delayed sound. Set the delay time using the "Delay (msec.):" scroll bar. "Delay amplitude:" adjusts the amplification of the delayed sound, and "Final amplitude:" adjusts the amplitude of the final mixed sound. Adjust both of these using the appropriate scroll bars. When you are ready, click "OK." You should be able to see a change in your sound segment's waveform as a result of mixing with the delayed sound. Check the effect by clicking the Play Selection button.

Amplify...

You can adjust the amplitude of a selected sound segment by choosing "Amplify..." from the **Wave** menu. Amplitude, strictly speaking, is not the same as volume, but the effects are similar. The "Amplify" options window provides



controls for setting the level of amplification and indicating your choice of how the amplification is to be applied.

A 100% amplification means that the sound will be played back at 100% of the recorded level—the same as what is now saved in your file. At less than 100%, the sound will be quieter, and at more than 100%, it will be louder. Using the scroll bar you can set the amplification to a value anywhere from 1% to 400%.

The “Don’t fade” option amplifies the sound evenly.

“Fade in” begins with no amplification and ends with full amplification.

“Fade out” begins with full amplification and ends with no amplification.



CAUTION Technically speaking, amplitude is different from volume. A change in amplitude is a change in the height of your sound's waveform. If you amplify beyond SoundWave's wave range limits, “clipping” will occur, and you will lose a portion of your sound and introduce distortion. If you have overamplified and have introduced clipping, “Undo” (Edit menu) is unable to restore the sound to its original state. (See “Recording a sound” in *Chapter 2. Using the Digitizer* for details on clipping.)

To fade a sound into silence, select the segment to be faded by placing the Selection cursor near the end of the sound and selecting to the end of the Sound file. Then choose “Amplify...” from the **Wave** menu, set amplification to 1%, and select the “Fade in” option. Click “OK” and play the entire sound to check the effect. If necessary, you can Undo the operation and repeat the procedure with a selection that begins earlier or later than the one originally chosen. Note that the fading of amplification is spread evenly over the selection.

To fade in a sound from silence, select the segment to be faded by placing the Selection cursor at the beginning of the sound and selecting the segment over which amplification is to be applied. Then choose “Amplify...” from the **Wave** menu, set amplification to 1%, and select the “Fade out” option. Click “OK” and play the entire sound to check the effect. If necessary, you can Undo the operation and repeat the procedure with a selection that ends earlier or later than the one originally chosen.

Reverse

You can reverse the storage order of a selected sound segment by choosing “Reverse” from the Wave menu. When played, the reversed segment sounds as though the original segment is being played backwards. If you reverse the selection a second time, it will leave you with the original sound.

Silence

You can add silence to your sound by selecting part of it and choosing “Silence” from the Wave menu. Silencing a selected segment replaces its waveform with a flat, horizontal line. With “Silence” (as with all other Wave commands), it’s good practice to listen to the selection (by clicking the Play Selection button) to be certain you have selected the desired segment before applying the command.

Smooth

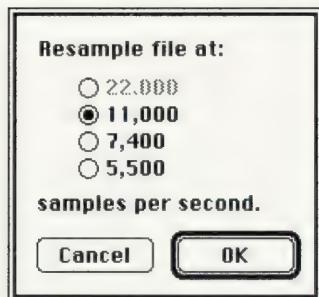
You can mute a selection by averaging out sudden changes in amplitude with the “Smooth” command. When you play back your selection, you will notice a certain deadness of tone.

Resample...

Sound is sampled during recording at one of four rates, 22,000, 11,000, 7,400, or 5,500 bytes per second. Higher sampling rates sound better but require more computer memory and occupy more disk space than lower rates. If you need to decrease the size of a sound file while retaining the full duration of recorded sound, you may be able to do so by resampling at a lower rate.

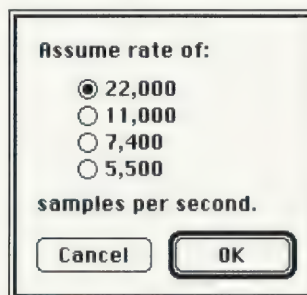
“Resample...” from the **Wave** menu allows you to resample at a rate lower than that originally used for recording, never at a higher rate. Also, unlike most SoundWave commands, resampling affects the entire sound file, not just the selection.

“Resample...” is a one-way process! **“Undo” does not work with “Resample”!** However, you can protect against inadvertent loss of the original sound by using “Save” or “Save as...” from the **File** menu prior to using “Resample...” If you’re not pleased with the results of resampling, you can easily revert to the saved version by using “Close” (**File** menu) and not saving the changes.



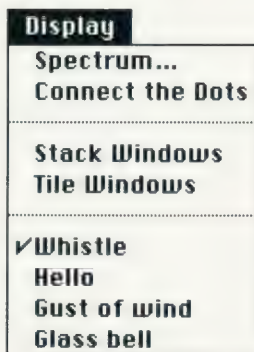
To resample the sound in a file, choose “Resample...” from the **Wave** menu. Depending on the rate at which your sound is already recorded, some options in the options window may not be available. Choose the rate at which you want to resample your sound, and click “OK.” Your sound will be irreversibly resampled.

Assume Rate...



Sound files not created with SoundWave may be assumed to be sampled at 22,000 bytes per second. If the file is known to be at a lower sampling rate, you can tell SoundWave by selecting the proper rate with the “Assume Rate...” command. This operation does not change the actual contents

of the sound file, just the way they are interpreted.

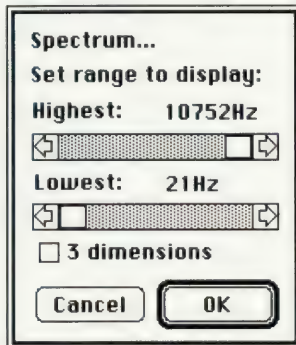


• Display menu

The **Display** menu commands give you control over the selection of windows to be displayed and the appearance of the displayed waveforms.

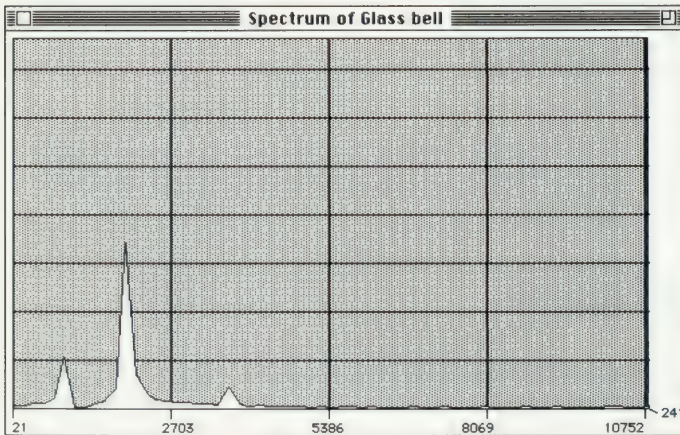
Spectrum...

Spectrum windows show the amplitude of frequencies in a series of 1K segments of sound. **To create a Spectrum window** for the selected sound, use the “Spectrum...” command and set parameters in its options window.



Use the scroll bars to change the frequency range you want to plot, and, if you like, click the “3 dimensions” box to show changes in the spectrum over time. Click the “OK” button to generate the Spectrum window.

Starting at the beginning of the selection, Spectrum breaks the sound up into slices of 1024 bytes. After creating a new Spectrum window, the frequencies of the first slice are plotted with their relative amplitudes. If “3 dimensions” is checked, the next slice is plotted offset from the one before it, to show the frequencies over time. If there’s enough sound, eight slices will be plotted. The start time of each slice is shown in milliseconds.

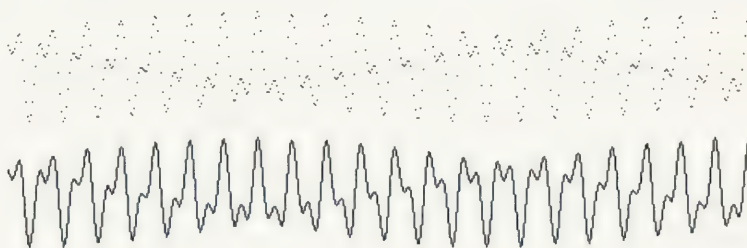


Example of 2 dimension Spectrum window. Compare with others earlier in this chapter in which 3 dimensions had been selected (see “Spectrum windows”).

To return to the Sound window, close the Spectrum window by clicking its close box or choosing “Close” from the **File** menu.

Connect the Dots

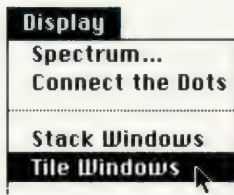
If “Connect the Dots” in the **Display** menu is selected, SoundWave will draw lines between amplitude values in the Wave display. This can make it easier to detect patterns in seemingly chaotic samples. Selecting the Pencil cursor, or selecting “Connect the Dots” makes the Wave display revert to the normal, dots-only display mode.



The same sound segment is shown in dots-only mode and in connect-the-dots mode.

Stack Windows

The “Stack Windows” command stacks all the open Sound windows, one on top of the other, offsetting them slightly from the upper left-hand corner of the screen.



Tile Windows

The “Tile Windows” command arranges all the open Sound windows side by side on the screen.



NOTE

The bottom part of the **Display** menu simply lists all of the open Sound and Spectrum windows. If you choose one, that chosen window will become active, and will be brought to the front of the display.

Custom

About Custom...

Install snd

Tone Generator

- **Custom menu**

The **Custom** menu lets you use additional features that have been added to SoundWave as **Custom** menu commands. An example Custom item, a simple tone generator, has been included with SoundWave and is accessible with the “Tone Generator” command.

The Custom menu lets you add new features to SoundWave. See your manual for details.

OK

Tone Generator																	
This utility will generate up to four sine waves of different frequency and amplitude. Length is entered in bytes. A value of 22255 produces one second of sound. Period is entered in bytes. Twenty-two bytes gives a 1 kHz tone. Amplitude should be from 0 to 127.	Length	2225															
	<table><thead><tr><th>Wave</th><th>period</th><th>amplitude</th></tr></thead><tbody><tr><td>1</td><td> 1 </td><td> 0 </td></tr><tr><td>2</td><td> 1 </td><td> 0 </td></tr><tr><td>3</td><td> 1 </td><td> 0 </td></tr><tr><td>4</td><td> 1 </td><td> 0 </td></tr></tbody></table>	Wave	period	amplitude	1	1	0	2	1	0	3	1	0	4	1	0	
Wave	period	amplitude															
1	1	0															
2	1	0															
3	1	0															
4	1	0															
Cancel OK																	



AUTHORWARE

Movies

How to produce movies



Chapter 1. Movie Icon

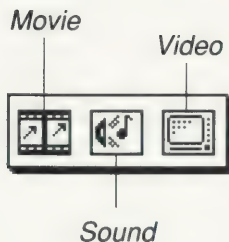


Capabilities

The Movie icon can present in rapid succession a series of display images on the screen during application presentation. The rapid updating from one image to the next produces a movie-like effect, resembling the closely timed projection of frames in a movie film. Movies used in your applications might consist of a running horse, a spinning ball, or a rotating needle on a gauge. Movies can be shown at a stationary location or, under the control of an Animation icon, can be moved across the screen in relationship to other display objects. They can be shown one time (i.e., at the point they are encountered in the flow line) or repeatedly until a terminating condition becomes true. Their playback parameters (Start and End Frame, playback speed, playback direction) can be dynamically controlled during presentation depending on the values of user variables. PICS movie files, created using Macromind Director can also be loaded and played in Authorware applications using the Movie icon. The possibilities are infinite.

- **Options**

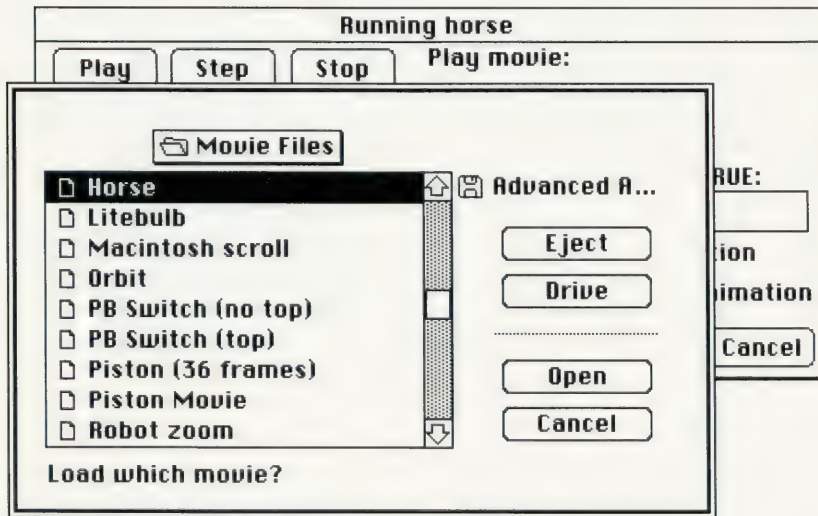
The Movies disk includes some **sample movie files** and a PICS animation file that you can use to experiment with movie capabilities. This chapter describes how to use movies and the Movie icon in *Authorware*. Tools for creating your own movies are introduced in *Chapter 2*, illustrated with an example in *Chapter 3*, and described in detail in *Chapter 4*.



The Movie icon will appear in the lower left-hand corner of your screen, together with the Sound and Video icons.

Insert a Movie icon at the point in your flow line where you want a movie to play, title it, and open it as you would any other icon (see the *Authorware Professional Reference* manual, *Chapter 3. Designing Your Application* for details on placing, titling, and opening icons).

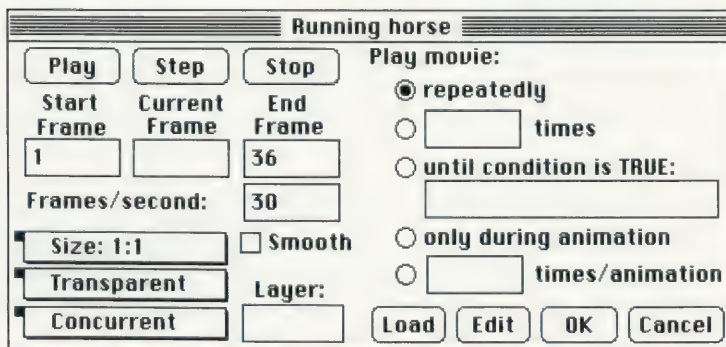
Two windows will appear on the screen. In the “Load” window, (i.e., the top-most one) you can select the movie file containing the movie you want to be played. Open the selected file (and load the chosen movie into your file) by clicking “Open” or by double-clicking the file name. Doing so closes the “Load” window, reveals the movie options window beneath, and places the movie images on the screen.



The movie options window enables you to specify the parameters of movie playback. It is similar in function to the animation control windows described in *Chapter 5. Icons of the Authorware Professional Reference manual*.

As an aid for assuring that you have selected the correct movie file, the loaded movie is played back in the presentation window adjacent to the

movie options window. In the event you have selected the wrong movie, click the “Load” pushbutton to activate the “Load” window again.



To position the movie within the presentation window, merely drag it with the mouse. If necessary, you can reposition the movie options window by clicking in the title bar and dragging.



Using a scene from your movie

Start Frame	Current Frame	End Frame
3	5	18

When a movie is first loaded, the numbers of the first and last frames in the movie file are shown in the Start Frame and End Frame slots, respectively. If you wish, you can select a scene (i.e., a sequence of contiguous frames) from the full movie to be played with this particular Movie icon. To do so, enter one frame number in the Start Frame slot and another in the End Frame slot.

Authorware will play back only the frames between those two numbers. **You can specify that the scene be played backwards** by entering the higher-numbered frame as the the Start Frame and the lower-numbered one as the End Frame. You can control scene composition and the direction of play dynamically during presentation by entering variables or expressions in the Start Frame and End Frame slots.

Click the **Step** pushbutton to roll your movie a frame at a time and choose the first and last frame for a scene. The number in the Current Frame slot tells you what frame is presently showing in the presentation window. You can click **Play** (or press the Return or Enter keys) to display the sequence of frames selected. The **Stop** pushbutton halts playback until you restart it.

Frames/second: 15

Playback speed

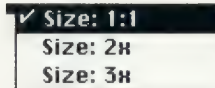
The default playback speed is 30 frames per second. If you want to speed up or slow down the playback of your movie, click in the Frames/second slot and enter the desired speed (or enter a variable or expression to control playback speed dynamically during presentation). *Authorware* will play back your movie at any rate from one frame per second on up. However, if the setting is too high to display all frames at the selected rate, *Authorware* will skip frames, as necessary, so as to play the movie at the chosen speed.

☒ **Smooth**

In order to play as fast as possible without skipping, click the **Smooth** option.

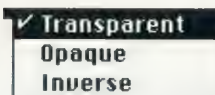
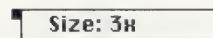
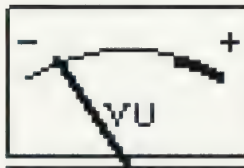
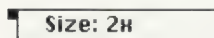
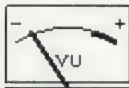


Using the Smooth option may result in the movie playing at different speeds when different types of computers are used for application presentation.



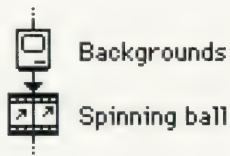
Size of playback image

There are three pop-up menus in the lower left-hand corner of the movie options window. The first of these is the **Size** menu. Click on the menu, hold the button down to “pop up” the choices, drag the pointer to your choice, and release to select it. Your choices are to play the movie at the size at which it was made (i.e., 1:1), twice that size (2x), or three times that size (3x). The size of the playback image of a PICS movie cannot be adjusted through *Authorware Professional’s* movie options.



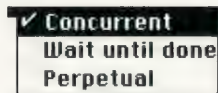
Appearance of playback image

The second pop-up menu in the movie options window controls the playback appearance of the movie in relation to other objects on the screen. Open the menu (by clicking and holding the mouse button) and select the appropriate choice. **Transparent** allows other objects to show through the movie’s frames. **Opaque** makes the movie’s frames play back as if they were lying on top of any other images at that position on the screen, thus covering them up. Opaque movies require more disk space and memory than transparent movies. **Inverse** turns pixels in the movie frames white to black and black to white as necessary to allow objects below to show through during playback.



Adding Color to Movies

Movies created with the Movie Editor can have color added to them. Use the “Color...” command in the Edit menu when the movie options are open in the development system. Each Movie icon can have any single color applied to its frames. The color is applied to the black portions of the movie. Some adjustments may need to be made for color interactions.

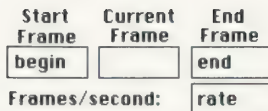


Method of playback

The third pop-up menu controls the way in which your movie will be played back, *vis-a-vis* the other things that are happening in your file. The choices are similar to those in other animation features.

Concurrent allows your file to continue to run (i.e., to process icons following the Movie icon in the file flow) while the movie plays. **Wait until done** halts presentation of other icons in your file until the movie is finished playing.

Perpetual causes the movie to respond immediately to changes in values of variables in the movie’s playback parameter slots. This enables you to control the movie’s playback during file presentation.



For example, if the user variables named “begin” and “end” are entered in the Start Frame and End Frame slots, respectively, you can set their values in a calculation to cause a particular scene in the movie to be played, or a “still frame” to be shown. You can even reverse the direction of playback by giving the “end” variable a lower frame number than the “begin” variable. Similarly, you can control the playback speed with a user variable, possibly one named “rate”, in the Frames/second: slot. Increasing the value of the variable will increase the playback speed.

start	end	rate	Effect
1	52	30	Play Frames 1 - 52 at 30 Frames Per Second (FPS)
1	20	15	Play Frames 1 - 20 (i.e., a scene) at 15 FPS
52	1	30	Play movie backwards
1	1	1	Play Frame 1 as a “still frame” at 1 FPS

If the pop-up menu selection is set to “Concurrent” or “Wait until done,” the movie will play back in accordance with the values of the parameter variables *at the time* the Movie icon is encountered on the flow line. However, if the “Perpetual” option is used, the movie playback will continue to respond to subsequent changes in these parameters. The Perpetual option gives you unique and powerful capabilities for controlling the display of movies and animations.

Layer

If you are playing back several movies at once, with one overlapping another, you may want to control which movie should appear in front of or behind another. You can set the layer at which you want your movie to play in the Layer slot. Higher numbered layers will appear in front of lower numbered layers. Layer controls only affect movies or animated objects; movies always appear in front of stationary displays. [The behavior of layered movies is similar to that of layered animations (see “Layer” in *Chapter 5. Icons* in the *Authorware Professional* reference manual for details).]

Play movie:

- ☒ **repeatedly**
- ☐ **times**
- ☐ **until condition is TRUE:**
- ☐ **only during animation**
- ☐ **times/animation**

When and how many times to play a movie

The five “Play movie:” options on the right-hand side of the movie options window control the timing of movie playback. Click the button that corresponds to your choice and, if necessary, set the parameters in the slot provided. Each choice has a different result according to these guidelines:

repeatedly: Plays the movie over and over again until it is told to stop.

___ times: Plays the movie the specified number of times. Click the second button, and enter in the parameter slot the number of times you want the movie to play when the Movie icon is encountered during presentation. Using a variable or expression allows you dynamic control over this parameter.

until condition is true: Plays the movie repeatedly until the condition in the slot becomes true. Click the third button to select this option and then enter the condition that must become true before the movie will stop.

only during animation: This choice will place the first frame of the movie on the screen, but the movie will only play when an Animation icon moves the movie display or when the user drags the movie across the screen. This option can be used for special effects such as simulated walking, jumping, etc. by showing arm and leg movements of a figure with a Movie icon while it is being repositioned on the screen by an Animation icon or dragged by the user.

___ times/animation: This option is similar to **only during animation**, except that it limits the number of times the movie will play during each repetition of the animation.



For example, you could simulate the moon's orbit about the earth with a combination of a fixed path animation (for the orbital path) and a movie (showing the moon's rotation).

Note that with the “___ times/animation:” option selected, *Authorware* adjusts movie playback speed to complete the indicated number of plays during each animation repetition regardless of the value in the Frames/second slot. Thus, for this example, specifying that the animation be completed in a shorter time (e.g., 10 seconds) causes *Authorware* to increase the movie playback speed, as necessary, to complete the moon's rotation during the

Rotate moon

Play	Step	Stop	Play movie: ☐ repeatedly ☐ ___ times ☐ until condition is TRUE: ☐ only during animation ☒ 1 times/animation
Start Frame 1	Current Frame 	End Frame 15	
Frames/second: 30		☐ Smooth ☐ Layer:	
Size: 1:1		☐ Load Edit OK Cancel	
☐ Transparent			
☐ Concurrent			

Revolve moon

Drag display to extend the path Fixed Path

Path Editing

Seconds Layer Repeat until

15 done

for ☐ Speed ☒ Time



shorter “month.”

When you have made choices for all options, you may want to click Play (or press Return or Enter) to check the effects. When you are ready, click “OK” to store settings for the

current Movie icon.

Black Arrow

Play Step Stop

Start Frame: 1 Current Frame: End Frame: 4

Frames/second: 30

Size: 1:1 Smooth

Transparent Layer:

Concurrent

Play movie:

☒ repeatedly

☐ times

☐ until condition is TRUE:

☐ only during animation

☐ times/animation

Load Edit OK Cancel

Making changes

To reopen the movie options window, double-click the Movie icon in your flow line (or the movie image while running the file). You can then make changes to the playback settings or to the movie file itself if it is an *Authorware Professional* movie file. PICS movie files should be edited using the application in which they were

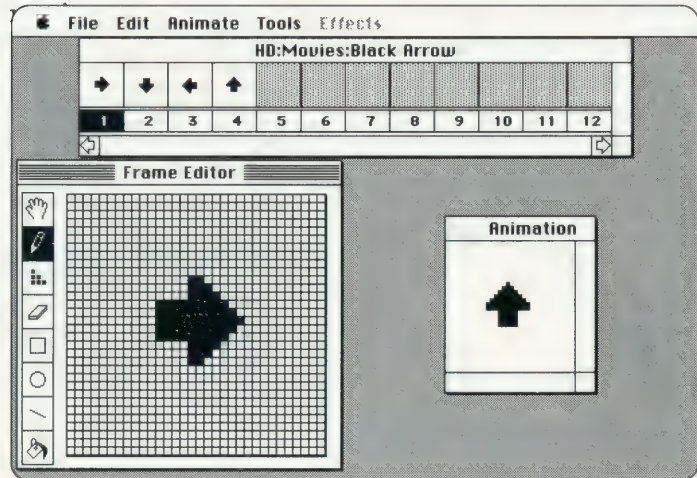
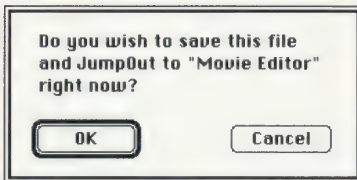
created.

To change settings for playback of a particular movie or scene, simply reopen the options window, then click, choose, or enter the revised settings, and *Authorware* will store the changes when you click “OK.”

To change movies for playback, open the movie options window and click the Load pushbutton to reopen the “Load” window. Select the movie file you want and double-click or click Open to load it. The new movie will replace the previous one, and the movie options window will reappear

to allow you to reset the playback settings, if necessary.

To make editing changes to the currently loaded movie, reopen the options window and click the “Edit” pushbutton. You will be asked whether or not you wish to complete a JumpOut from *Authorware* to the Movie Editor application with the currently loaded movie file attached. You can then make the desired changes with Movie Editor (using features and tools described later in this manual). When you have finished using Movie Editor, select “Quit” in the File menu and you will be returned to *Authorware* at the point from which you left. PICS movie files cannot be edited using the *Authorware* Movie Editor. Use the application in which they were created for editing PICS



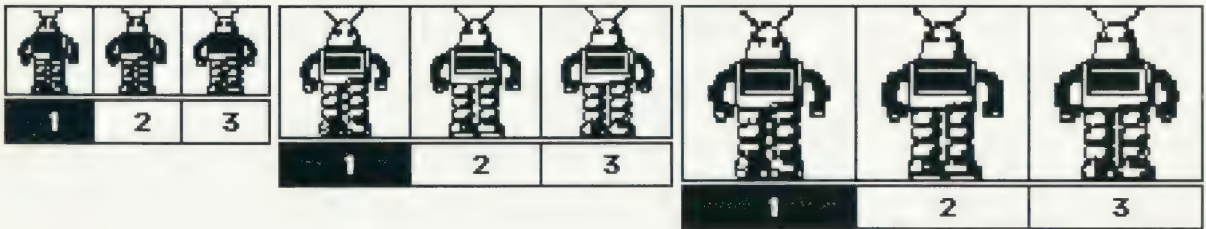
Chapter 2. Movie Editor Overview

Introduction

The purpose of this chapter is to introduce terminology, windows, and menu commands used in the Movie Editor application. Their use is illustrated in *Chapter 3* and more fully described in *Chapter 4*.

- **Frames**

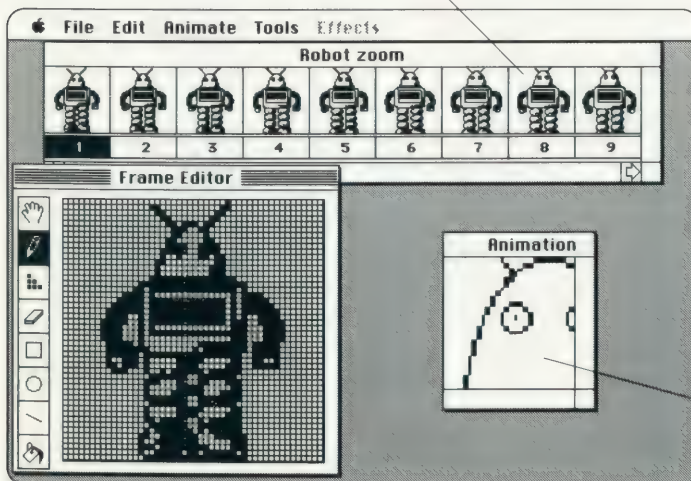
The basic building block for *Authorware* movies is the frame. A frame is one picture of the many that comprise a movie. Frames come in three sizes: 32 by 32, 48 by 48, and 64 by 64 pixels. Smaller frame sizes occupy less computer memory and take up less disk space when saved in your file; larger frame sizes allow you to create movies having larger, more detailed images.



Frame Display

- **Windows**

You will use five different windows in Movie Editor. Three of them, the Frame Display, the Frame Editor, and the Animation window, will appear on your screen when you first start the program. The others, the Sketchpad window and the Make-A-Scene window, are activated with the commands in the **Tools** menu.



Animation window

Frame Display window

The window near the top of the screen is the Frame Display. It displays a strip of frames from the movie file you are editing and reference numbers for each frame. A scroll bar is provided to allow you to move the window to any part of the movie. **To select a frame** to work on, simply click it with the mouse. Its frame number will be highlighted, and its image will appear in the Frame Editor. The title of the Frame Display window is the name of the movie file you are currently editing.

Frame Editor window

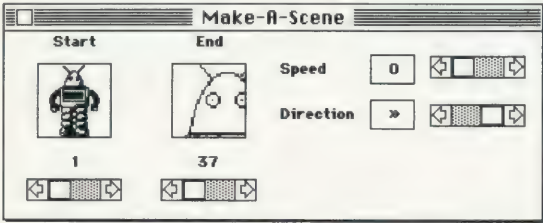
At the bottom left of the screen is the Frame Editor. It shows an enlarged image of the frame that is currently selected. The Frame Editor tools allow you to edit the image in the frame. Just click the desired tool and use it to draw ovals, blacken areas, erase points, or whatever.

Animation window

While the Animation window is open, it displays a constant animation of the frames you have created. If you make the Animation window active (by clicking it or using the “Animation window” command in the **Tools** menu), you can drag it on the screen, resize it, or close it to turn off the animation.

Sketchpad window

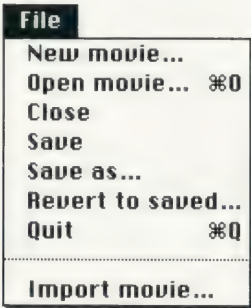
The Sketchpad window is activated by use of the “Sketchpad window” command in the Tools menu. It enables you to import bit-mapped graphics from the Macintosh Scrapbook (such as MacPaint™ images), edit them using the Sketchpad tools, and transfer a frame-sized portion to the Frame Editor for inclusion in the movie.



Make-A-Scene window

The Make-A-Scene window is activated by use of the “Make-A-Scene window” command in the **Tools** menu. It allows you to quickly modify the playback shown in the Animation window. The Make-A-Scene window provides options for changing the start frame and end frame, the playback speed (in increments of a sixtieth of a second) and the direction of playback.

- **Menus**

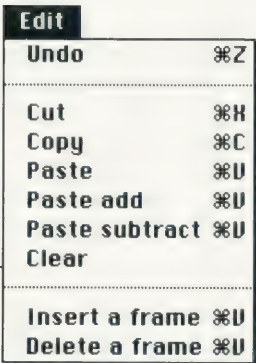


File menu

The **File** menu controls the opening, closing, and saving of files. Most commands are similar in function to their counterparts in other Macintosh applications, but there are some which may be unfamiliar:

The “Revert to saved...” command nullifies changes made to the current movie file since the last time it was saved. The previously saved version of the file is reopened.

“Import movie...” enables you to open an existing movie file and add all the frames in that file to the end of the current movie or at any selected frame in the current movie.



Edit menu

The **Edit** menu commands allow you to copy, move, change, or delete images.

Generally speaking, the **Edit** commands have the same function in Movie Editor as they do in *Authorware* and other Macintosh applications.

There are also several commands in the Edit menu that may not be familiar to you.

The “Paste add” command pastes the copied image transparently on top of the existing image instead of replacing the image completely.

“Paste subtract” subtracts the “pasted image” from the existing image into which it is pasted. Wherever there is black in the pasted image, white is pasted into the existing image, and *vice versa*.

When you choose “Insert a frame,” the currently selected frame and all frames to the right of it are moved one frame to the right.

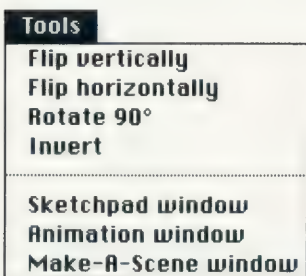
“Delete a frame” removes the currently selected frame from the movie.

See “Movie Editor menus” in *Chapter 4, Movie Editor Reference* for more details on the use of these and other menu commands.



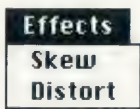
Animate menu

You can control the playback of an animation with the commands in the **Animate** menu. They enable you to control the speed, direction, and range of animation.



Tools menu

The **Tools** menu commands affect the entire image in the selected frame and are used in conjunction with the tools provided in the Frame Editor. Three commands in this menu also allow you to open the tools that are defined as windows.



Effects menu

The **Effects** menu commands enable you to produce special effects for your movie images. The commands alter images inside the “Sketchpad” window’s select box, so you must have the Sketchpad visible in order to use this menu.

Chapter 3. Movie Editor Example

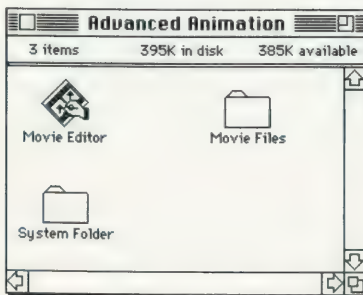
Introduction

The purpose of this chapter is to demonstrate some of the features of the Movie Editor and to familiarize you with its basic operation through the use of a simple example.

In this example, you are asked to start up the Movie Editor application with the movie file called “triangle and square,” modify that movie, and then save the changed movie file to a disk. The movie file “triangle and square” is included in the small library of movies on the Movies disk. It contains a simple sequence of frames showing a small square moving across the screen in front of a large triangle. Your task is to modify the movie so the square will move behind the triangle rather than in front of it.

- **Installing and starting the program**

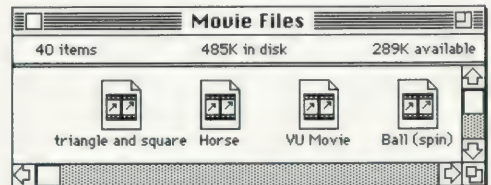
The 3.5-inch Movies disk contains the Movie Editor and some sample movie files. As permitted by the License Agreement for *Authorware*: 1) If you have a hard disk, copy the Movie Editor application and the folder of sample movie files to it and set the original disk aside for safekeeping, or 2) If you have a Macintosh with two 800K floppy drives, make a working copy of the Movies disk and store the original.

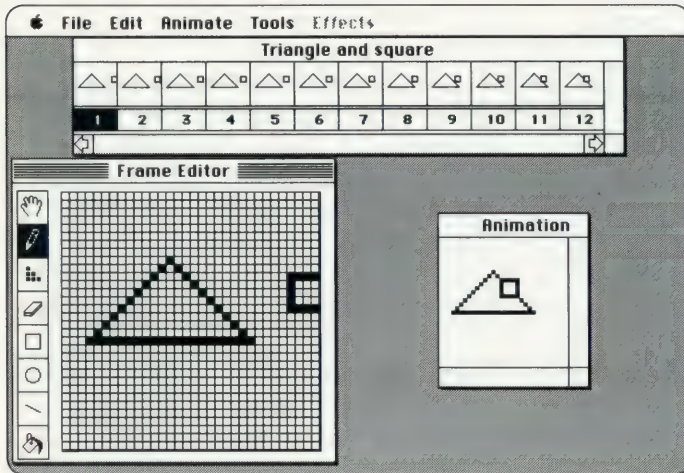


When you have completed installation, start your Macintosh and double-click the Movie Files folder icon to open it.

Find the “triangle and square” Movie icon in the window and open it by double-

clicking. Doing so will open the Movie Editor application with the movie file “triangle and square” attached. The screen should then appear with the Frame Display, the Frame Editor, and Animation window displayed.





The **Frame Display** shows some of the frames in the “triangle and square” movie file. You will use the Frame Display to scroll through the movie file and select the frames you are going to change. As indicated by the highlighted frame number in the illustration, Frame 1 of the movie is already selected when you open the file.

You will use the **Frame Editor** to change or edit selected frames in the movie. It should currently be showing the image in Frame 1 (i.e., the selected frame).

The **Animation window** continuously runs the sequence of frames. In the movie “triangle and square,” you should see a small square passing in front of a larger triangle. Your task in this tutorial is to change the movie so that the square moves behind the triangle instead of in front of it.

- **Selecting frames in the Frame Display**

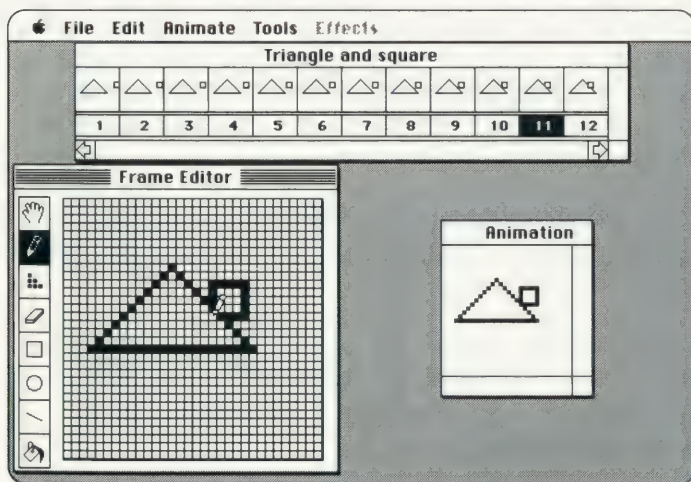
In order to modify this movie so that the square moves behind the triangle, you need to change only those frames in which portions of the square are currently in front of the triangle. The other frames do not need to be changed. As you examine the Frame Display, you will see that the square doesn’t even touch the triangle until Frame 9.

- Move the pointer to Frame 9 in the Frame Display and click once. This selects Frame 9. Now look in the Frame Editor window. It should be displaying the image of Frame 9. You can see that the square is touching the triangle but not yet in front of it, so the image does not have to be changed.

- ❑ Now click on Frame 10 in the Frame Display and look at the image in the Frame Editor. The square is moved to the left one pixel, but the image still does not have to be changed.
- ❑ Now click on Frame 11 and check the Frame Editor. As you can see, one corner of the square is now covering the triangle. This image needs to be changed.

- **Changing a frame image**

To change the image of Frame 11, you will use the pencil tool in the Frame Editor.



- ❑ Move the pointer to the **pencil tool icon** in the tool palette on the left side of the Frame Editor. Click once. When you move the pointer into the image area of the Frame Editor, the pointer will turn to a pencil. You can use the pencil to turn black pixels white and white pixels black simply by clicking on them.
- ❑ Move the pencil to the pixel of the square that is inside the triangle and click on it to turn it white.

The change you made in the Frame Editor is shown immediately in the Frame Display. You will see the change in Frame 11. Then, look carefully at the animation. The small change you made is also visible just as the square hits the triangle in the animation window.

- ❑ Now select Frame 12 in the Frame Display, and change that frame, again using the pencil in the Frame Editor. This time you will also have to fix the side of the triangle.

To change Frame 13, you will have to reposition the movie in the Frame Display so you can see Frame 13. To do this, simply click a few times on the arrow at the right-hand end of the scroll bar at the bottom of the window. Then, click on Frame 13 and make the necessary changes in the Frame Editor.

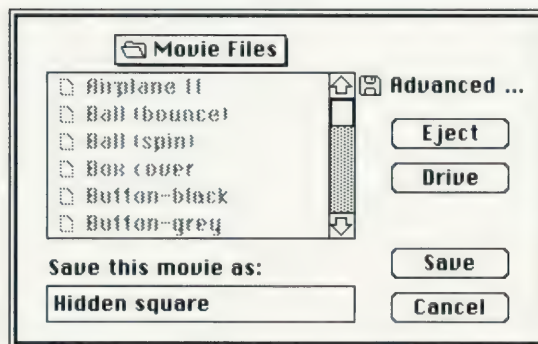
Continue in this manner until all the necessary frame changes are made. By the time you are finished, the Animation window should show the square moving invisibly behind the triangle.

- **Saving the movie**

You will want to save your movie so that you can retrieve it later for further editing or for playback with *Authorware*. The “Save as...” option will allow you to save the movie you just changed under a new name (other than “triangle and square”).

- ☐ Move the pointer to the **File** menu and select the “Save as...” command. The “Save as...” options window will appear on your screen.

Type in a name for your movie, perhaps something like “hidden square,” then click the Save pushbutton. The Movie Editor will now save the new movie with the file name you entered.



- **Exiting the program**

To exit the program, simply choose “Quit” from the **File** menu. The program will stop, and the Macintosh desktop display will appear on your screen.

If you like, you can now open *Authorware*, add a Movie icon to your flow line, and load the movie file “hidden square” using the procedures described above in Section 1. *Movie Icon*.

Congratulations! You have just created your first movie. We hope you enjoy exploring the many other tools provided by Movie Editor (described in *Chapter 4. Movie Editor Reference*.)



If you have accessed Movie Editor from *Authorware* by clicking the Edit movie pushbutton from a Movie icon options window (as described above in *Chapter 1. Movie Icon*), choosing “Quit” from the **File** menu returns you to *Authorware* rather than the desktop.

Chapter 4. Movie Editor Reference

Introduction

This Section provides a more detailed description of Movie Editor features and controls.

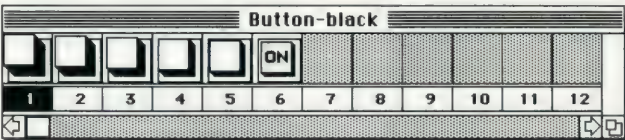
- **Movie Editor windows**

Frame Display

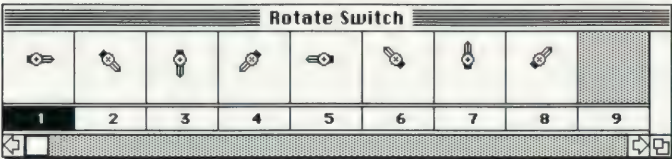
The Frame Display window displays consecutive frames from the current movie. It is used to scroll through the frames and to select individual frames for editing.

The Frame Display is sized according to the size of the frame chosen for the movie file at the time it was created (see “File menu” later in this Section for details on choosing frame size).

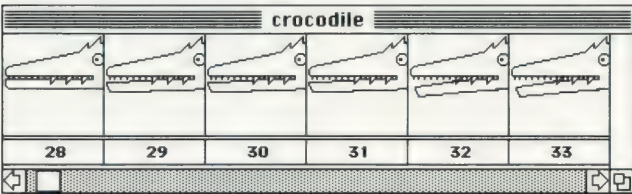
32 x 32



48 x 48



64 x 64



The frames are displayed in their “true” size, meaning that the window is taller for 64 by 64 pixel frames than for 32 by 32 pixel frames. You can also change the size of the window to show fewer or more frames at a time.

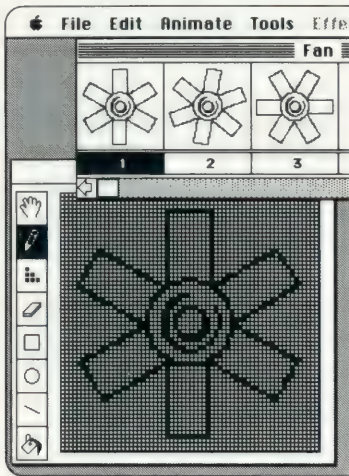
Each frame in a movie is numbered, starting with one, and going through the maximum number that will fit into the memory of your Macintosh. The number of each frame is displayed immediately below the image of the frame and is highlighted when the frame is selected. You can select a frame by clicking the mouse within the image of the frame. The selected frame is displayed in the Frame Editor window. If a frame has never been selected, its image is shown as grey. All the frames in a new movie file are initially grey.

The horizontal scroll bar allows you to scroll the window to different portions of the movie file. Clicking on the arrows advances the film one frame in the indicated direction. Clicking in the scroll bar on either side of the scroll box advances the window one half of the number of frames currently displayed. The scroll box itself can also be dragged to any position in the scroll bar.

The movie’s file name is displayed as the name of the Frame Display window. The word “untitled” will appear if the movie is new and has never been saved.

Frame Editor

The Frame Editor allows you to create or change the image in a frame. **The Frame Editor always references the currently-selected frame in the Frame Display window**, and all changes to the image in the Frame Editor appear **immediately** in the referenced frame in the Frame Display. When a movie file is first opened, the Frame Editor will reference the first frame in the file (i.e., Frame 1 is selected automatically).



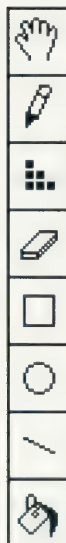
The Frame Editor is a permanent window; its size can't be changed and it can't be made to go away, although it can be moved anywhere on the screen. As long as a movie file is open, the Frame Editor, with its companion window the Frame Display, will be present on the screen.

Changing the Frame Editor image

There are four ways you can change the image in the Frame Editor:

1. You can **copy the image from one frame to another**. To do this, select the frame you want to copy and either "Cut" or "Copy" it using commands in the **Edit** menu. Then select the frame to which you want to paste the image and choose "Paste" from the **Edit** menu. The pasted image will appear in the selected frame and in the Frame Editor.
2. You can **modify the image directly by using the tools** supplied in the palette along the left side of the Frame Editor window. These tools allow you to turn image pixels on and off, shift the image, erase pixels, and draw shapes. See "Frame Editor tools" later in this Section for details.
3. You can **use one of the tools in the Tools menu**. These tools affect the entire image for the selected frame, including flipping the image either horizontally or vertically, rotating the image 90 degrees, or inverting it (i.e., changing white pixels to black and *vice versa*). See "Tools menu" later in this Section for details.

4. You can also **change the image by using the Sketchpad** in one of two ways:
 - a) You can take a snapshot from the Sketchpad. This is done by selecting a portion of the Sketchpad image with the select box, and clicking on the camera tool. The snapshot will appear in the Frame Editor and the selected frame in the Frame Display.
 - b) The entire frame image can be copied and pasted to the Sketchpad, where it can be resized, distorted, skewed, or otherwise changed and returned to the Frame Editor. (See “Sketchpad” later in this Section for details.)



Frame Editor tools

A helpful set of tools is provided in the palette on the left side of the Frame Editor. The tools are very similar to those in MacPaint. Clicking on a tool's icon selects it and changes the pointer to a symbol for that tool. Note that all changes made to the image in the Frame Editor are immediately reflected in both the Frame Display window and the Animation window.



The **hand tool** is used to reposition the image in the Frame Display. Click on the hand to activate this tool. Move the hand into the image area and hold down the mouse button. As you move the mouse, the image shifts in the direction of motion. An outline of the initial position of the image is preserved in the background grid as a reference to show how far you've moved the image. When you release the button, the image will lock into place. The parts of the image that have gone off the edge of the frame are trimmed and cannot be retrieved.



The **pencil** is used to turn pixels in the image on and off. Click on the pencil icon to change the cursor to a pencil, then move the tip of the pencil to a pixel and click. If the pixel had been black, it becomes white; if white, it turns black. If the mouse button is held down, the pencil activates all the pixels in its path.



Clicking on the **grid tool** will toggle the background grid between white and black. This is useful for editing frames having a black background. The grid tool doesn't change the pointer; it merely changes the display.



The **eraser** is used to quickly and easily turn black pixels white. Simply move the eraser over the pixels you want to erase while holding down the mouse button. If you double-click on the eraser tool, all the pixels in the image are erased.



The **rectangle tool** is used to draw rectangles and squares. Place the pointer at one corner of the planned rectangle, press and hold the mouse button, and drag the pointer to the opposite corner. The rectangle will be drawn as the pointer is moved.



The **oval tool** is used to draw ovals and circles. It works in the same fashion as the rectangle tool, except that it draws ovals rather than rectangles.



The **line tool** is used to draw straight lines. Move the pointer to the beginning point of the planned line, hold down the mouse button, and drag the pointer to the line's ending point. You'll see the line drawn as you move the mouse.



The **paint can tool** allows you to fill areas with black. Click on the paint can icon and move the pointer to a white pixel in the area that you want to blacken. Click the mouse button. The area that is bounded by black pixels or the edges of the frame will be filled with black.

Animation window

You can monitor your movie in the Animation window. It displays a continuously running animation of the current movie and enables you to see instantly the effects of the changes you make on the movie you are creating.

Activating the window

You make the Animation window active (by clicking it or using the “Animation window” command in the **Tools** menu).

Turning off the movie

To close the Animation window and turn off the movie, make it the active window and click in its close box.

Resizing

The Animation window can be made almost any size, from smaller than a frame to almost as large as the screen. To change the size, simply drag the resizing box at the the lower right-hand corner of the window. To make the animated image square, hold down the Option key while resizing the window. When you release the button, the window will be sized to the largest size that will fit with a square picture. To make the picture exactly the same size as a frame, hold down the Shift key while resizing. When the button is released, the window’s size will jump to the size of a frame in the Frame Display. To make the image size a multiple of a frame, hold down both the Option and Shift keys while resizing.



Controlling animations in the Animation window

Each movie (or scene within a movie) has a start frame and an end frame for animation in the Animation window. To set the start frame, select the frame in the Frame Display at which you want to start animating, and select “Set start frame” from the **Animate** menu. To set the end frame, simply click the frame in the Frame Display at which you want to end animation, and select “Set end frame” from the **Animate** menu. The “Play all frames” command will set the start and end points to the first and last frames in the movie file. Note that when the animation runs past the end frame, it automatically starts again with the start frame.

When playing movies, the speed of animation is controlled through the use of the commands “Fastest,” “Faster,” and “Slower” in the **Animate** menu. Animation speed is relative to many factors, especially the size of the Animation window. The movie will run faster as the window is made smaller. Animation will run most quickly if the window is resized with the Option key pressed, because the program will not have to resize and scale the image while it is animating. It will also run faster when it is resized to a multiple of the frame size. This is accomplished by holding down both the Shift and the Option keys while resizing.

The direction of animation can be changed by selecting “Reverse direction” from the **Animate** menu.



All of these animation parameters can also be set from the Make-A-Scene window (see “Make-A-Scene window” later in this Section).

Sketchpad window

The Sketchpad provides powerful tools for creating, importing, and manipulating images that can be copied to the Frame Editor and inserted in the movie. To activate the Sketchpad, choose “Sketchpad window” from the Tools menu.

Ways to use Sketchpad

The Sketchpad can be used in three basic ways:

1. The Sketchpad can be used simply **for drawing**. The Sketchpad is more finely grained than the frame editor, allowing you to draw more naturally. Some basic tools are included in the Sketchpad’s tool palette to assist you (see “Sketchpad tools” later in this Section for details). These tools are sufficient for many purposes, but if you need more sophisticated ones, you can use MacPaint (or another program for creating bit-mapped images) and paste them into the Sketchpad window.
2. The Sketchpad can be used **as an interface to the rest of the Macintosh environment**. In particular, images created in programs such as MacPaint can be copied into the Sketchpad. To do this, first paste your image from MacPaint to the Scrapbook. Then, start Movie Editor, open the Scrapbook, select the image you want and copy it by choosing “Copy” from the **Edit** menu. Next, select the Sketchpad window, and paste the copied image into it (choose “Paste” in the **Edit** menu). If the image is too large to fit in the Sketchpad, you’ll be asked if you want to trim the image or shrink it to fit.

3. The Sketchpad can also be used to **change images already in frames**. This is done by copying a frame image into the Sketchpad (or into the select box), distorting or changing the image using the **Effects** menu or the Sketchpad tools, and then snapshotting it back into the frame with the camera tool. This procedure is described in the following section.

Moving Images to the Frame Editor

You can move images from the Sketchpad to the Frame Editor in two ways:

- 1) Use the camera tool to take a snapshot of the entire Sketchpad or a portion enclosed within the select box (see “Sketchpad tools” below for details on use of the select box and camera tools).
- 2) Copy the Sketchpad image to the Clipboard and paste it to the Frame Editor by using “Copy” and “Paste” in the **Edit** menu.

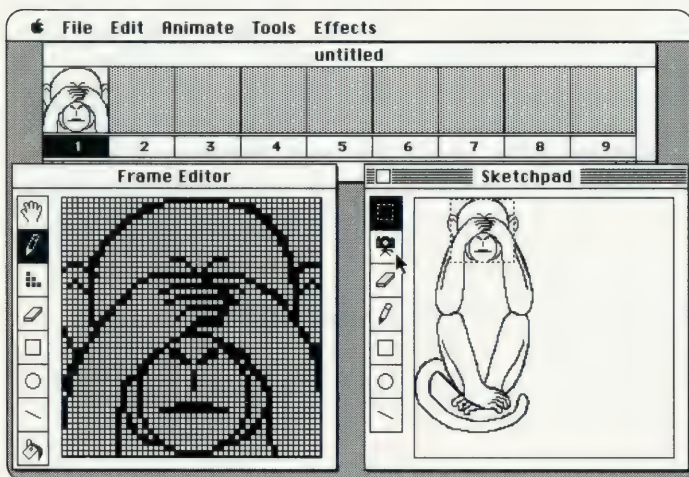
Sketchpad tools



Several tools are provided with the Sketchpad. They are located in the palette on the left side of the Sketchpad window.

 The **select box** enables you to select a portion of the Sketchpad window. It targets a chosen command to the image inside of the box. For example, if you choose “Cut” from the **Edit** menu when the select box is activated, the image within the select box will be cut (i.e., removed from the Sketchpad window and placed on the Clipboard).

To activate the select box, simply click once on the select box tool icon. A dashed line box will appear in the window. You can use the mouse to drag the select box anywhere in the Sketchpad.



You can change the size of the select box by double-clicking the select box tool. The pointer will change to a crosshair shape that can be used to drag the sides of the select box to make it larger or smaller. If the select box is made larger than the movie file's frame size, the image within it will be shrunk to fit into the currently-selected frame when the camera tool is used. If you hold down the Shift key while resizing, the select box will revert to the size of the frame in the frame display.



The **camera tool** enables you to take snapshots from the Sketchpad into the Frame Editor. To take a snapshot, simply click on the camera tool. If the select box is not active, the entire contents of the Sketchpad will be copied into the Frame Editor. If the select box is active, only the portion inside the select box will be copied. Using the camera to take snapshots is similar to copying from the Sketchpad and pasting into the Frame Editor.



NOTE An image can be pasted into the Sketchpad from the Macintosh Clipboard. If the image is larger than the Sketchpad, you're asked whether to shrink it to fit or trim the excess. The select box can then be positioned over a portion of the Sketchpad display to prepare the camera tool to copy the selected image to the frame editor. The Frame Editor tools (in conjunction with the "Copy" and "Paste" commands in the **Edit** menu) can then be used to create a sequence of frames in the Frame Display for animation.



The **eraser tool** is used to easily erase portions of the Sketchpad. Click once on the tool to turn the pointer into a box. When you press the mouse button, the pixels beneath the box are erased. The eraser can be dragged to clear larger areas.

Double-clicking the eraser tool erases the entire Sketchpad.



The **pencil tool** is used to create freehand drawings. Click the pencil in the tool palette to change the pointer into a pencil. To start drawing, just press down on the mouse button and drag the pencil across the Sketchpad.



The **rectangle tool** is used to draw rectangles or squares. Place the pointer on one corner of the planned rectangle, press and hold the mouse button, and move the mouse to the opposite corner. The rectangle will be drawn as the mouse is moved.



The **oval tool** is used to draw ovals and circles. It works in the same fashion as the rectangle tool, except that it draws ovals instead of rectangles.



The **line tool** is used to draw straight lines. Move the pointer to the beginning of the planned line, hold down the mouse button, and to the end of the line. You'll see the line drawn as you move the mouse.

Make-A-Scene window



The **Make-A-Scene** window contains controls that allow you to change the start frame and end frame, the playback speed, and the playback direction. Although all of these features can also be set using selections in the **Animate** menu, the controls provided here are often faster to use. Open the Make-A-Scene window by choosing “Make-A-Scene window” in the **Tools** menu.

The start frame and end frame of the animation playback are shown both by their image and their frame number. Use the scroll bars to change the start and end frames.

The speed scroll bar can be used to set playback speed. Each increment represents one sixtieth of a second difference in the time between playback of adjacent frames. The smallest value, “0,” means that the animation will run as fast as possible with minimal delay between frames. The largest value, “60” sets the playback to run very slowly at one frame per second.

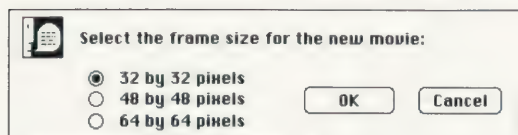
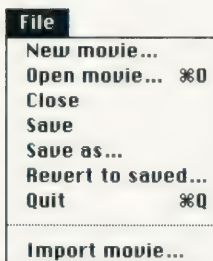
The direction of playback can be toggled between two positions: forward and backward. You can change direction by clicking on the button.

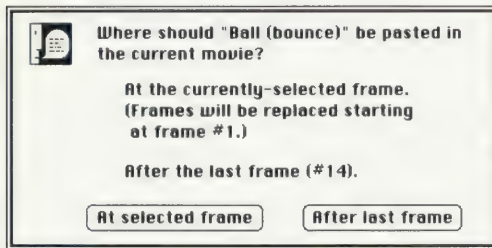
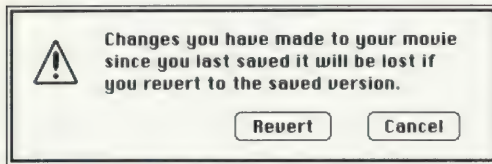
- **Movie Editor menus**

File menu

The **File** menu controls the opening, closing, and saving of files. Because it uses standard Macintosh file handling routines, the option windows you see will appear similar to those in other applications.

The “New movie...,” “Open...,” “Save,” “Save as...,” and “Quit” commands in the **File** menu work similar to those in *Authorware* and most other Macintosh applications. If you don’t know how to use them, refer to your Macintosh manual or the *Authorware Reference* manual.





Edit	
Undo	⌘Z
Cut	⌘H
Copy	⌘C
Paste	⌘V
Paste add	⌘U
Paste subtract	⌘U
Clear	
Insert a frame	⌘U
Delete a frame	⌘U

The "Revert to saved" command nullifies changes to the current movie file since the last time it was saved. The saved file is reopened. This command is a shortcut for quitting without saving changes and opening the old file.

"Import movie..." enables you to open an existing movie file and add all the frames in that file to the end of the current movie or beginning at the selected frame of the current movie.

If the frame sizes are different, the frames read in from the imported file will be scaled to fit into the frame size used in the current movie. The "Import movie..." command is useful for building movies a scene at a time, and then assembling them in sequence.

Edit menu

The **Edit** menu commands allow you to copy, move, change, or delete images.

Generally speaking, the Edit commands have the same function in Movie Editor as they do in *Authorware* and other Macintosh applications.

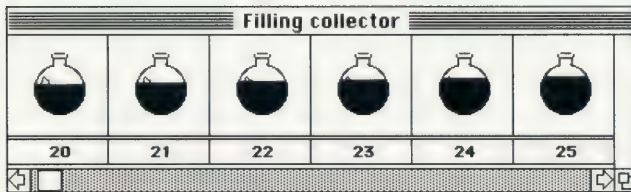
When active, the "Undo" command allows you to undo the last operation you performed. For example, if you accidentally delete an image that you want to keep, "Undo" will bring it back. (Note: "Undo" is not active in the Sketchpad.)

To "Cut" or "Copy" frames or images, select the items to cut or copy and choose the appropriate command. Choose "Paste" to place the cut or copied image into the current selection. Movie Editor will scale the image to fit as necessary. The "Clear" command erases the selected image, but doesn't copy it to the Clipboard.

There are also several commands in the Edit menu that may not be familiar to you.

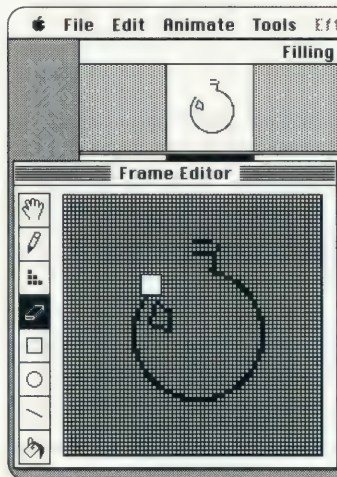
The “Paste add” command pastes the copied image transparently on top of the existing image instead of replacing the image completely.

The “Paste subtract” command removes the pasted image from the existing image instead of replacing the image completely. In other words, wherever there is black in the copied image, white is pasted into it, and *vice versa*.



In the example shown, a movie sequence simulates the filling of a distillation collector with a dark-colored distillate. As the level of liquid rises in the flask, it gradually covers the area at the left which simulates reflected light. The obscured “reflection” can be restored by

turning the reflection’s pixels white. One approach to this would be to isolate the reflection (by erasing away all other pixels in the image of the empty flask) and using the “Paste subtract” command. Note that this method works well for those frames for which the reflection is already covered, but other methods (e.g., use of the pencil tool) might be necessary for the frames in which the reflection is only partially covered.

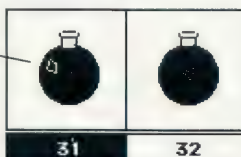


The “Insert a frame” command is active only in the Frame Display. When you choose “Insert a frame,” the currently-selected frame and all frames to the right of it are moved one frame to the right. The frame that had been selected becomes blank. This command is a useful tool for adding frames between existing frames in order to add detail or refine movement of objects.

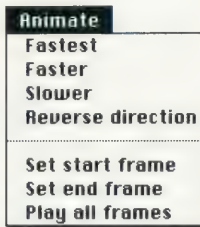
Copy to the clipboard



Select frame and use “Paste subtract”



“Delete a frame” removes the currently-selected frame from the movie. All frames following the one deleted are moved one number to the left, and a blank frame is placed at the end of the movie.



Animate menu

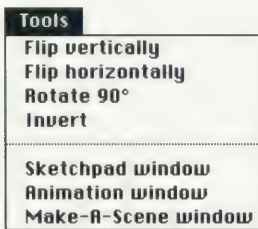
You can control the playback of an animation with the commands in the **Animate** menu. The commands enable you to control the speed, direction, and range of animation.

To change the speed of the animation playback, simply choose one of the first three commands in the menu—“Fastest,” “Faster,” or “Slower.” The “Fastest” command causes the animation of the current movie to run as fast as possible by minimizing the delay between playback of adjacent frames. “Faster” sets the animation of the current movie to run faster (unless it is already running at the fastest possible speed). The “Faster” command can be selected more than once to gradually speed up the animation. Each time it is selected, it speeds up the animation one sixtieth of a second per frame by reducing the delay between frames. “Slower” is the complement to the “Faster” command. It slows down the animation one sixtieth of a second per frame by increasing the delay between frames.

To change the range of playback, you can use the “Set start frame” and “Set end frame” commands. Simply select the frame you wish to be first or last in the playback, and choose the appropriate command. If you’re creating a new movie and have opened the next grey frame, “Set end frame” is automatically applied to that frame. The “Play all frames” command sets the first and last frames for movie animation to the first and the last frames in the movie file.

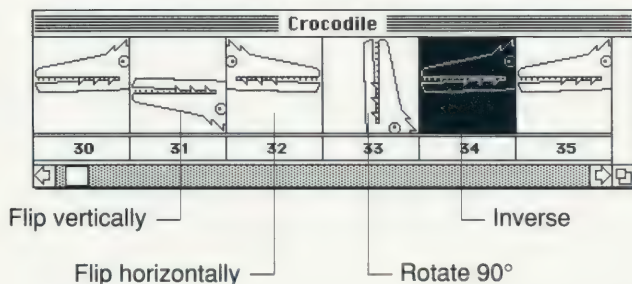
You can play a movie in the opposite direction by choosing “Reverse direction” in the **Animate** menu. You can choose it again to return to the original direction.

Each of these playback parameters can also be set using the Make-A-Scene window. See “Make-A-Scene window” earlier in this Section for details.



Tools menu

The **Tools** menu commands affect the entire image in the selected frame. They work in conjunction with the tools provided in the Frame Editor. Three commands in this menu also allow you to open the tools that are defined as windows: the “Animation window,” “Sketchpad window,” and “Make-A-Scene window.”



The **“Flip vertically”** command flips the image in the selected frame vertically, making the top of the image the bottom and *vice versa*.

The **“Flip horizontally”** command flips the image horizontally, making the left side of the image the right and *vice versa*.

“Rotate 90°” turns the image in the selected frame 90 degrees clockwise.

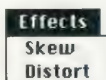
“Inverse” changes all black pixels in the selected frame to white, and all white pixels to black.

Use these commands for access to other features of the Movie Editor:

“Sketchpad window” opens the Sketchpad window. If it’s already open, it will become the selected window. (See “Sketchpad window” earlier in this Section for details).

“Animation window” opens the Animation window. If it’s already open, it will become the selected window. (See “Animation window” earlier in this Section.)

The “Make-A-Scene window” command opens the Make-A-Scene window. If it’s already open, it will become the selected window. (See “Make-A-Scene window” earlier in this Section)



Effects menu

The **Effects** menu commands enable you to produce special effects for your movie images. The commands alter images inside the “Sketchpad” window’s select box, so you must have the Sketchpad visible to use this menu.

When you select **“Skew,”** handles appear on the four corners of the current select box. You can select and drag any one of these four corners to change the shape of the box. The corner opposite the selected corner remains stationary. The other two corners will move in such a way that the select box remains a parallelogram (i.e., opposite sides remain parallel to each other). When the mouse button is released, the image that had been in the original select box is mapped into the skewed select box.

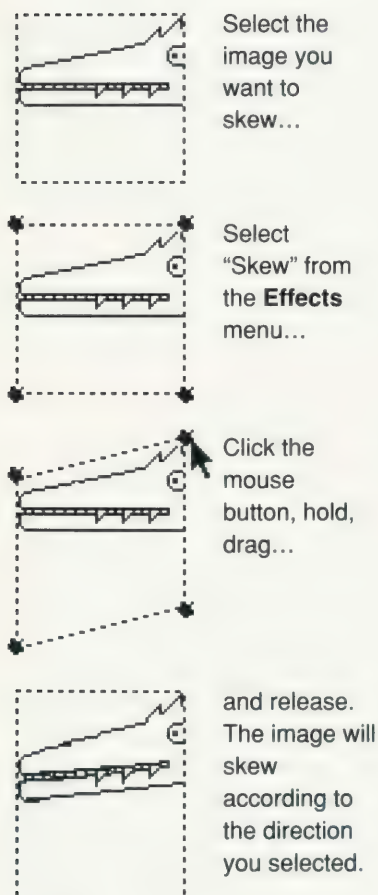
Use of “Skew” in the **Effects** menu adds handles to the select box. Dragging one handle momentarily reshapes the select box to a parallelogram (Bob... can you draw a skewed box with handles? and pointer shown at one handle Can’t capture a screen in the skewed position)

Releasing the mouse button maps the image in the original select box into the skewed box to produce a skewed image

Any operation other than selecting a corner of the select box will cancel the “Skew” operation.

The **“Distort”** command functions in the same way as “Skew,” but has a different effect. When a corner is grabbed and moved, only that corner moves. When the mouse button is released, the image that was in the original select box is mapped into the distorted select box.

Again, any operation other than selecting a handle of the select box will cancel the “Distort” operation.

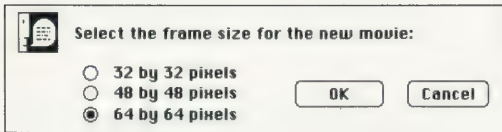


- **An integrated example**

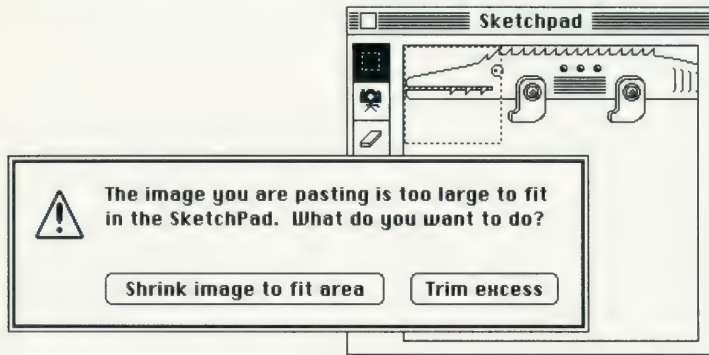
An example may be useful to illustrate the overall procedure for creating a movie with Movie Editor and integrating it into a segment of your application. The intent of the example is to begin with a static bit-mapped image (in this case, a stylized crocodile), to create a sequence of variations of it using Movie Editor features, and use the result with a Movie icon in *Authorware*.

Discrete steps in the procedure are described and illustrated.

1. Select the initial bit-mapped image and paste it to the Macintosh Scrapbook.



2. Open Movie Editor by double-clicking its icon from the Macintosh desktop display. Close the empty, “untitled” movie file (because, in this case, its frame size is too small) and use the “New movie...” command in the File menu to create a new movie file. Choose the frame size you need (in this case, 64 by 64 pixels).
3. Open the Sketchpad using the “Sketchpad window” command in the Tools menu. Click the select box tool icon. It will open in the Sketchpad window and will be the same size as the frames in the movie file.
4. Copy the bit-mapped graphic (i.e., the crocodile) from the Scrapbook to the Clipboard and paste it in the Sketchpad. Because it is too large to fit, you’ll be asked whether to shrink it or trim the excess.



In this case, we choose to trim off the tail.

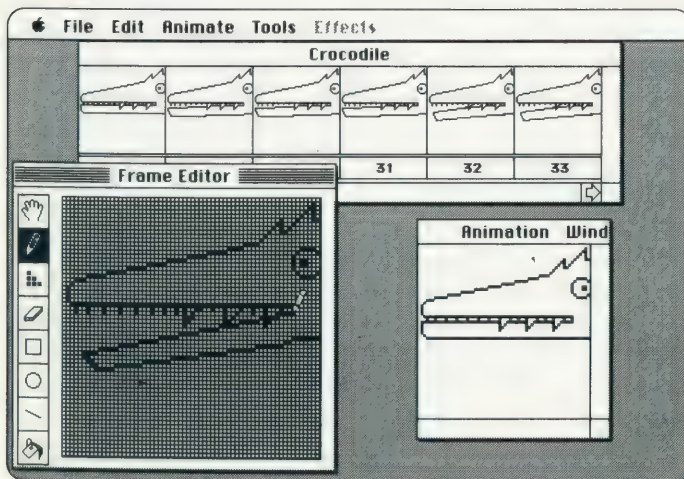
5. Click the camera tool icon in the Sketchpad tool palette to copy the selected frame-sized portion from the Sketchpad to the Frame Editor.
6. Use the Frame Editor tools (and, perhaps, those in the **Tools** menu) to modify the

image to be included in Frame 1, if necessary. Then copy the Frame 1 image to the Clipboard, select Frame 2, and paste the Frame 1 image there. Modify the Frame 2 image, as desired, and repeat the copy, select, and paste sequence for Frame 3. This cycle is repeated, as necessary, to create the remaining frames.

In this case, the first several frames of the movie are used to roll the eye of the crocodile. The sequence is constructed by copying the initial frame image to the Clipboard, selecting Frame 2 in the Frame Display, pasting in the Frame 1 contents, modifying the eye with the pencil tool, copying the modified version to the

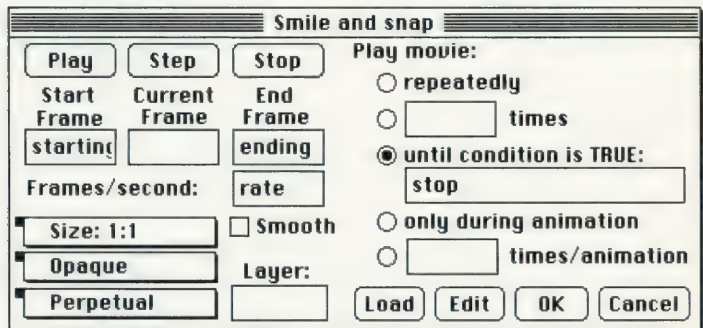
Clipboard, selecting the next frame and repeating the “paste, modify, copy” cycle.

A later sequence involves erasing the lower jaw of the crocodile and redrawing it in a partially open position. The eraser, line tool, and pencil are used for this purpose. In succeeding frames, the jaw is gradually opened further and further, and the upper teeth are completed (using the pencil tool). Meanwhile, an animation of the completed frames is shown continually in the Animation window.



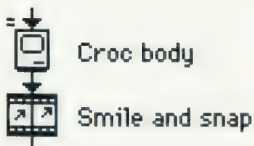
Note: It is good practice to save the file periodically (“Save” in File menu).

7. When editing of the movie frames is complete, exit Movie Editor (“Quit” in **File** menu), open *Authorware*, and create (or open) the file to which the movie will be loaded.
8. Add a Movie icon to the flow, open it, and click the Load movie pushbutton. Select and open the desired movie file to load it to the file. Choose appropriate settings for the movie playback parameters.

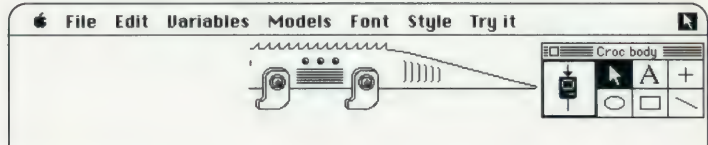
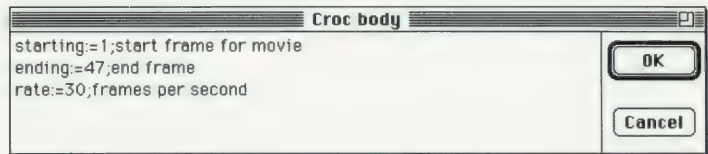


In this case, the movie playback is controlled by variables named “starting”, “ending”, and “rate.” The movie is set to play repeatedly until the value of “stop” becomes TRUE, and the Perpetual option is set to cause playback to respond immediately to changes in the controlling parameter variables.

9. Complete other development steps, as appropriate, to implement the design.



In this case, the Movie icon is preceded by a Display icon for the body of the crocodile. The display contents were created by editing a copy of the full crocodile image with a bit-mapped graphics program (e.g., MacPaint). The body image was created simply by erasing the face and mouth. The initial values of the controlling parameters are set in a calculation attached to the “croc body” Display icon.



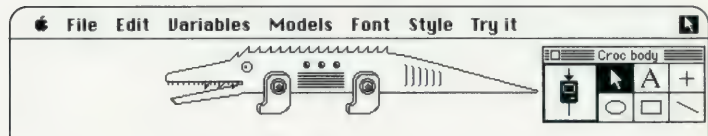
With these icons in place on the flow line, run the file (“Run” in the **Try it** menu). Using the mouse pointer, drag the movie showing the animation of the crocodile’s eye and mouth motion until it aligns with the body. The result is a fully assembled crocodile.



TIP

In order to simplify reuse of the completed animation

segment, you may wish to store it as a model file. See *Chapter 9. Models* in the *Authorware Professional Reference* manual for details. The crocodile segment can be used in conjunction with scaled path animations (one for the movie and one for the body), as feedback to a correct answer, in conjunction with a Sound icon (to play back crocodile-like sounds), and in many other ways. Storing it in a model will make it easily accessible for appropriate instructional use in other files.



The reason for bisecting the original crocodile and displaying only the body is to avoid having both static and dynamic crocodile jaws displaying at the same time. If the full crocodile had been shown with the movie superimposed on top, the original lower jaw would have shown through as the crocodile opened its mouth.



NOTE

If it seems necessary to make editing changes in the movie itself, you can open the movie options window and click the “Edit movie” pushbutton. Doing so allows you to JumpOut from *Authorware* to *Movie Editor* to complete the edits and then return again (by using the Quit command in *Movie Editor*’s **File** menu).



AUTHORWARE

Video Interface

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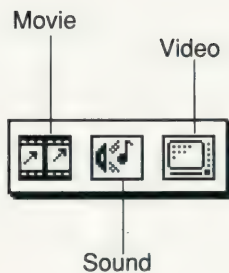


Section 3. Video



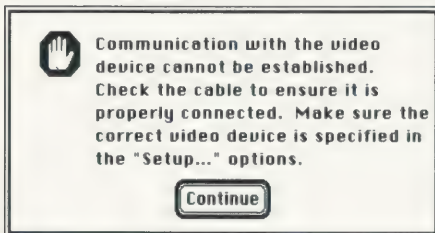
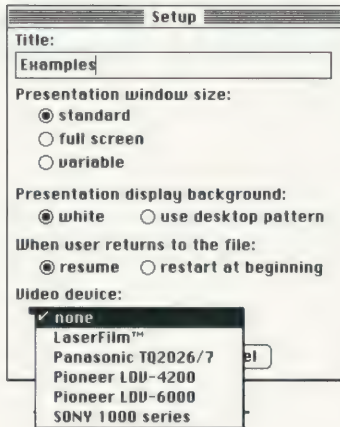
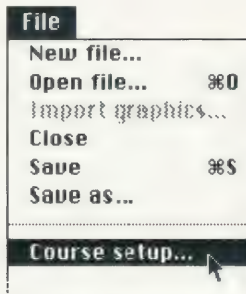
- **Capabilities**

The Video icon allows you to play video sequences and still frames in your applications. Video icons give you complete control over starting and ending frames, the conditions which initiate and terminate playback, the speed at which a sequence plays, and which audio channels will be heard. You can even allow the user to control playback of a sequence you have specified by making an on-screen Controller available during presentation. The Video icon provides a precise and convenient interface to the video player during development so that you can define video sequences with minimal effort.



- **Getting started**

The Video icon will appear in the lower left-hand corner of your screen, together with the Movie and Sound icons.



Specifying a video player

Before you begin placing video icons in a file, you should specify the type of video player you will use. To specify a video player for a file, choose the “Setup...” command in the File menu.

The Setup window contains a pop-up menu for specifying the “Video device” you’ll be using. The default setting is “none.” To choose a video player, move the pointer to the pop-up menu, press and hold the mouse button, drag to the device you want to select, and release the button.

In addition to specifying the Video device in the Setup window, check to be sure the video player is properly connected to your Macintosh. The video player can be connected to either the Modem or Printer serial port.



Different video players require different cables. See the *Appendix* for information on the cable configurations for the video players currently supported.

If the correct Video device is not specified or the player is not properly connected to your computer, you’ll see a message indicating the problem when a Video icon is encountered while running your file or while you are editing Video icon options. A similar message will be shown to a user using your file if the video player has not been properly connected to his or her computer.

Placing Video icons

Insert a Video icon at the location in your file where you want to play a video sequence or image, title it, and open it as you would any other icon (see the *Authorware Professional* reference manual, *Chapter 3. Designing Your Application* for details on placing, titling, and opening icons).

• Options

Video

Frame Numbers Current = 0

Start: <- Set Goto

End: <- Set Goto

Timing: Wait until done

Playback: Normal speed (3)

Freeze: last frame shown

until

Stop at end frame or:

☐ when condition is TRUE

☐ when any key is pressed

☐ User control

☒ Frame numbers

☒ Audio channel 1

☒ Audio channel 2

☒ Video on

Replay

Cancel OK

Double-click a Video icon to open it and display the Video options window. Several choices are available for you to determine what the user will see.

Controller

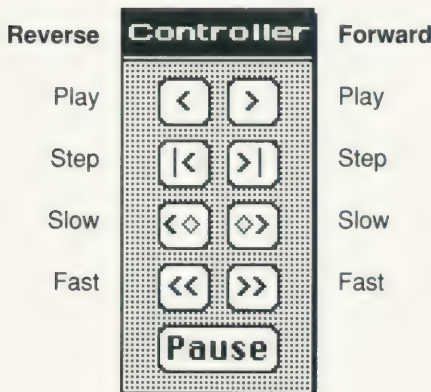
The Controller appears in the upper right-hand corner of the options window. The pushbuttons on the right control forward motion and those on the left control reverse motion. The buttons are active while the options window is open to allow you to find and play sequences on the videodisc.



“Play” causes the video to play at the normal speed in the direction selected. Sound contained on the audio channels of the disk **only** plays when the videodisc is playing forward at normal speed. (See *Playing sound* in Section 1. Sound of this manual for additional information.)



“Step” causes the video to move one frame in the direction selected each time the button is clicked.

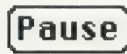




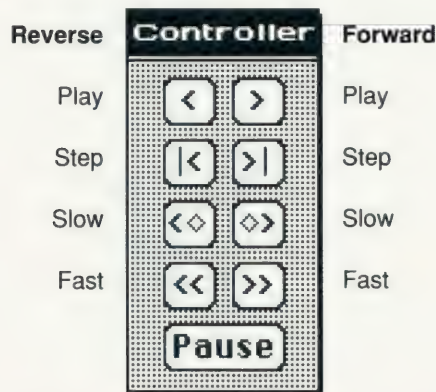
“Slow” causes the video to play at the player’s slowest speed in the direction selected.



The “Fast” buttons cause the video to play in the direction selected at the player’s fastest speed.



“Pause” stops playing the video regardless of the speed or direction. To start playing again, click the appropriate button on the controller.



Any sound contained on the audio channel of the disc is only played when you are playing forward at normal speed.

Frame Numbers

Numbers are assigned to each frame of the videodisc. You may specify a single frame or series of frames to be played in any particular Video icon.

Video	
Frame Numbers	Current = 24732
Start:	← Set Goto
End:	← Set Goto

“Current” shows the number of the video frame that is currently playing.

The “Start” slot is where you enter the number of the beginning frame of the sequence you want played. The “End” slot is where you enter the ending frame number of the sequence. You may type a number, variable name, or expression in either slot.

Click the “← Set” button next to either slot to have the current frame number automatically entered. A quick and easy way to specify a video sequence is to use the Controller to find the beginning frame, click the “← Set” button next to the “Start” slot, play the video to the ending frame, and click the “← Set” button next to the “End” slot.

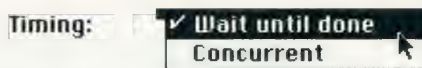


If you specify a “Start” frame number that is greater than the “End” frame number, the video sequence will be played in reverse. If you want to display a single frame, enter its number in both slots.

Clicking “Goto” causes the video player to move to the frame specified in the slot next to it. That frame will be shown on the video screen attached to your player and you can use the Controller to play from that point.

Timing

The “Timing” pop-up menu specifies whether anything else goes on while the video is playing.

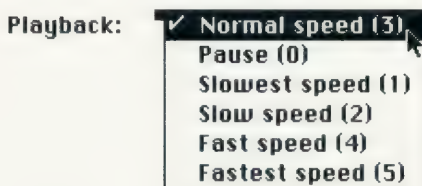


“Wait until done” halts presentation of subsequent icons in your file until the video sequence is completed. There may be other previously started perpetual or concurrent actions taking place while the Video icon is being executed.

“Concurrent” allows your file to continue to subsequent icons while the video sequence plays.

Playback

The “Playback” pop-up menu allows you to specify the speed to play your video sequence.



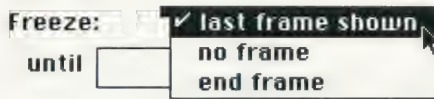
The Playback speed specified is applicable whether the video is playing forward or reverse.

If you allow the user to have control, he or she may override the Playback speed setting by clicking different Controller buttons.

The numbers in parentheses to the right of the speed description correspond to the speed parameter of the **VideoSpeed(speed)** system function.

Freeze

“Freeze” allows you to specify what remains on the video screen when the video sequence is completed. You can also specify how long it remains.



“Last frame shown” continues to display the last frame shown when the sequence stops playing or the user clicks the “Done” button on the Controller (see User Controller).

“No frame” turns the video screen off either at the end of the sequence specified or when the user clicks the “Done” button.

“End frame” displays the last frame specified in the “End” slot. If the user uses the controller and clicks the “Done” button while viewing another part of the sequence, the player moves to the “End” frame and displays it.

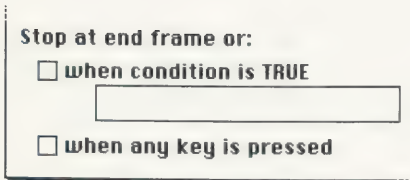
If you enter a condition in the “Freeze” slot, the frame shown will remain on the video screen until the condition becomes true. If no condition is entered the frame will be shown until the next Video icon is encountered or the user exits your file.

Stop at end frame or:

You may specify special conditions to playing the video.

If you check “when condition is TRUE” and enter a condition in the slot, the video will stop playing when the condition becomes true regardless of where it is in the specified video sequence.

If you check “when any key is pressed” the video stops playing when the user presses a key.



- ☐ User control
- ☒ Frame numbers
- ☒ Audio channel 1
- ☒ Audio channel 2
- ☒ Video on

The User's Controller

An important innovation provided with *Authorware* is the ability to define a video sequence and provide the user with an on-screen remote control to freeze frames, back up, play slowly, and otherwise control the video sequence you've specified. If you check the "User control" option, a Controller will automatically appear on the user's computer screen when the Video icon is encountered in your file. The user can drag the Controller to different screen positions if desired and use it to control playing the video sequence you have defined. The play buttons on the user Controller operate in the same way as those on the Controller in the Video icon window. The Controller remains on the screen and the sequence defined by your Video icon is available for review until the user clicks the "Done" button. If you've set the Video icon to "Wait until done" execution will not continue until the user presses "Done."



If you encounter a Video icon set to allow user control while running your file, the Controller will appear on your screen. It will remain even if you "Jump to icons" or "Pause" to make changes. You must press "Done" on the Controller to have it erased.

Displaying frame numbers

If you check "Frame numbers" they'll be displayed on the video screen to the user.

Playing sound

Checking "Audio channel 1" plays the sound on channel 1 of the videodisc.

Checking "Audio channel 2" plays the sound on channel 2 of the videodisc.



Some videodiscs have different sound on the different channels, so make sure you have selected the proper channel. If both audio channels are checked and the videodisc was recorded in stereo, the sound will be played in stereo.

Video display

“Video on” displays the video image on the video screen. If “Video on” is not checked, no image will appear while your sequence is playing. This is useful if you only want to play the sound contained on either or both audio channels.

Replay, Cancel, and OK buttons



The “Replay” button causes the video sequence specified by the “Start” and “End” frame numbers to be played in accordance with the other options you have selected.

“Cancel” closes the Video icon options window without storing your changes.

“OK” closes the Video icon options window and stores all of your settings.

- **System Variables**

VideoFrame provides the current frame number of the video device in use.

VideoDone has the value TRUE if the selected video sequence is done playing.

VideoResponding has the value TRUE if communications are established with the selected video device.

- **System Functions**

VideoDisplay(on) turns the video display on at the current frame.

VideoDisplay(off) turns the video display off at the current frame.

VideoSound(channel,on/off) turns the specified channel on or off. Enter number 1, 2 or 3 for channel (“3” indicates both channels). For example, VideoSound (3,on) turns on both audio channels. You may allow the user to choose the channel by responding to a question or set the channel according to performance, using variables.

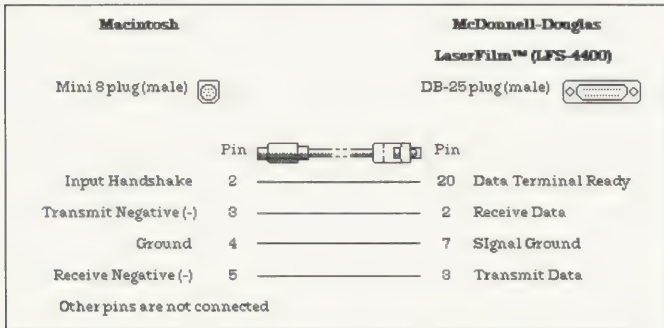
VideoSpeed(speed) sets the speed at which the video device plays the specified sequence. 0=pause, 1=slowest, 2=slow, 3=normal, 4=fast, 5=fastest. A negative speed number causes the video sequence to play in reverse.

VideoText(string,n) shows the text in “string” via the character generator in a videodisc player on line “n”. Only two devices supported with Version 1.5 have this capability. The Pioneer LDV-4200 can display eight lines of text. The Panasonic 2027F can display nine lines of text. This function is ignored for other devices.

Appendix A - Videodisc Specifications

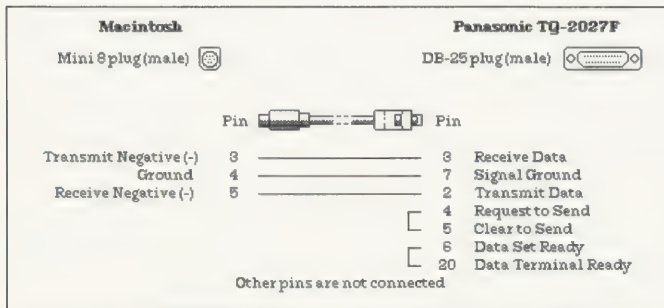
Cabling requirements and DIP switch settings for videodisc players supported with Version 1.5 are summarized below.

- **McDonnell-Douglas LaserFilm™ LFS-4400**



*Cabling requirements for
McDonnell-Douglas LaserFilm™*

- **Panasonic TQ2026F & TQ2027F**

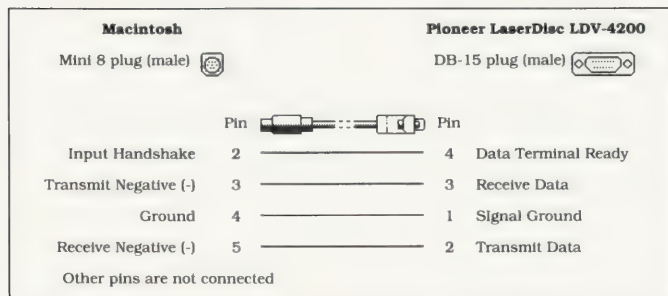


*Cabling requirements for
Panasonic TQ-2027F*

Panasonic 2026F & 2027F DIP switch settings:

- 1 OFF
- 2 ON
- 3 ON
- 4 ON
- 5 OFF
- 6 OFF
- 7 ON
- 8 OFF

• **Pioneer LDV 4200**

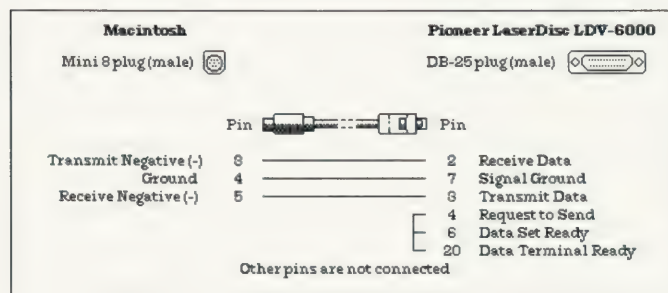


Cabling requirements for Pioneer LaserDisc LDV-4200

Pioneer LDV-4200 DIP switch settings:

- 1 OFF
- 2 OFF
- 3 OFF
- 4 OFF
- 5 ON
- 6 ON
- 7 OFF
- 8 OFF

• **Pioneer LDV-6000**

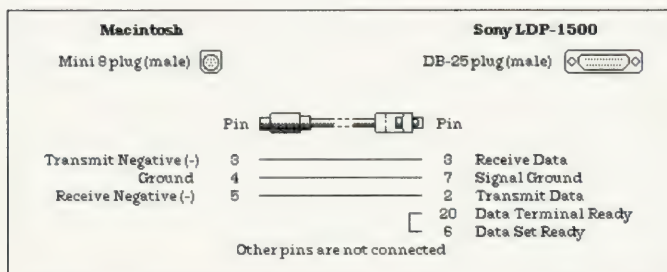


Cabling requirements for Pioneer LaserDisc LDV-6000

Pioneer LDV 6000 DIP switch settings:

- 1 UP
- 2 DOWN
- 3 UP
- 4 DOWN
- 5 DOWN
- 6 DOWN
- 7 UP
- 8 DOWN
- 9 DOWN
- 10 DOWN

- **SONY 1000 series**



Cabling requirements for SONY LDP-1000 series

SONY 1000 series DIP switch settings: (Baud rate selector)

- 1 DOWN
- 2 DOWN
- 3 DOWN
- 4 UP

Appendix B. CD-ROM

- **CD-ROM use with Authorware**

CD-ROM stands for “Compact Disc Read-Only Memory”. Each CD-ROM holds up to 660 megabytes of permanent data. This makes CD-ROM ideal for delivery of large applications, as well as databases such as encyclopedias.

When you access a CD-ROM, the data will appear just like data from any other read-only media. Since you cannot write on CD-ROMs, the Authorware run-time software automatically stores run-time status information on your boot disc volume (which is always writeable).

Audio Access. Authorware applications can play audio tracks from either mixed mode CD-ROMs (which contain one data track and one or more audio tracks) or standard audio CD-ROMs. This technology for storing data requires an Apple CD SC-compatible drive. This feature is provided through a User Function (also called an XCMD) which can be obtained directly from Authorware, Inc.

Creating CD-ROMs for Authorware Applications.

Data can be stored on CD-ROM discs either in a format suitable (or “native”) to your operating system (for example, Apple HFS) or in the ISO 9660 format (also called High Sierra). Data in a native format is easier to process (or “master”), because the data can be transferred directly from a hard disk device, but the ISO 9660 format is suitable for creation of CD-ROMs to be used in more than one operating system environment. Following are three providers of CD mastering services. No warranty is implied regarding these services.

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Cross-Platform Development

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Authorware Professional for Windows (APW) version 2.0 is compatible with Authorware Professional for Macintosh (APM) version 1.6 and later. Current versions are Authorware Professional for Macintosh version 2.0 and Authorware Professional for Windows version 2.0.

You can open APM files in APW and convert them to Windows format. Windows files **cannot** be converted to Macintosh format, nor can you play packaged Macintosh files with RunAPW.

This book has two purposes:

- ◆ To describe how to set up Macintosh files so that they can be easily converted
- ◆ To help troubleshoot problems on the Windows platform after you've converted.

Authorware has been designed to be consistent on the Macintosh and PC. But because the platforms differ, you'll see variations between the two Authorware applications. In light of these variations, we've included guidelines for developing cross-platform applications.

The best way to obtain predictable results is to convert your files often while authoring; this will surface problems before you have a lot of work to redo.

How to convert an APM file

Converting your Macintosh files is easy.

- 1. Save the APM file you wish to convert and give it a DOS filename. Rename content libraries with DOS filenames, using the .APL extension.**

DOS filenames have a maximum of eight characters and an .APM extension, as in TESTFILE.APM. If you do not change the name of the file, your network operating system or file transfer software will shorten it.

- 2. Convert any Director or QuickTime movies to Windows format.**

Before you transfer Director movies, you need to translate them using the Macromedia Gaffer, included with APW. This is explained in "Converting Director movies to Windows," later in this book.

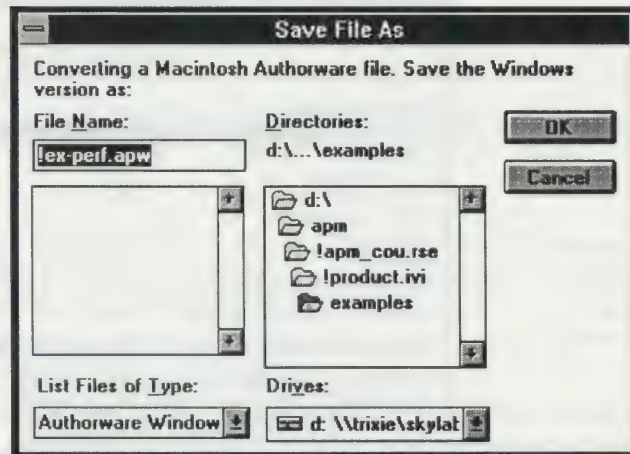
Macintosh QuickTime movies must be saved with the Movie Converter in order to be played by the QuickTime for Windows player. This is explained in "Converting QuickTime movies to Windows."

- 3. Transfer the Macintosh file to the PC or a server accessible from the PC. Also transfer any externally stored files such as Authorware content libraries or Director movies.**

You can do this using Apple File Exchange, using a third-party utility such as MacLink or DOS Mounter, or by using electronic mail or your network.

When transferring files through a file translator, make sure that you use binary filters or no filter. Certain translators alter the file so that APW cannot convert it.

4. **Open the file in APW. The Macintosh file is converted when it is opened in Authorware Professional for Windows. You will be prompted to rename the file.**



To show files that don't have an .APW or .APM extension, choose All Files from the List Files of Type drop-down list.

5. **If your file contains linked libraries, you will be prompted to locate and convert them.**

Libraries must have the .APL extension for APW to recognize them. You can also convert Macintosh library files using the Open Library command.

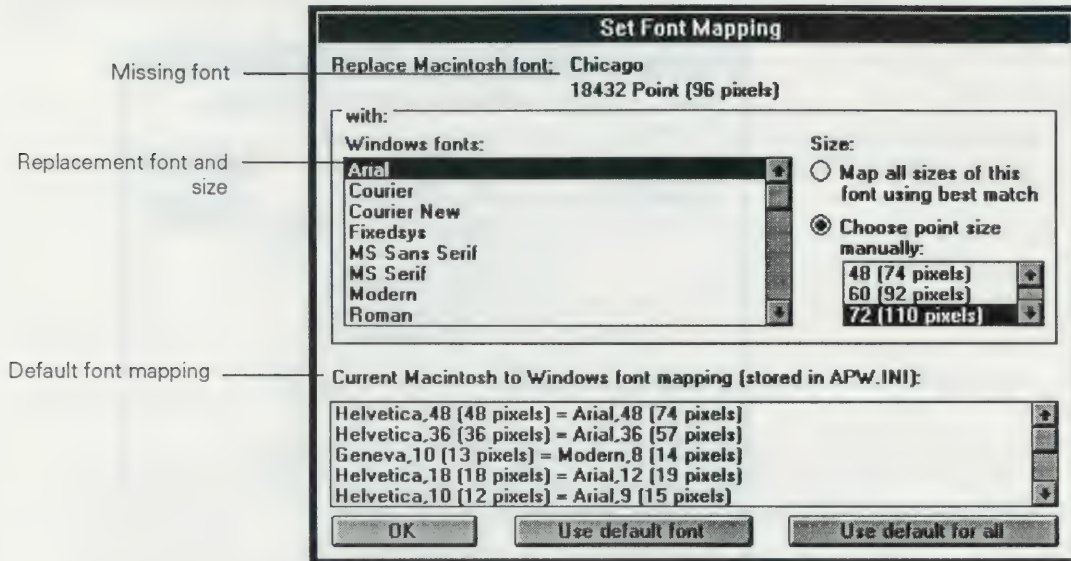
6. **APW prompts you to locate external movies.**

If your file refers to QuickTime or Director movies, you need to relink them, since converting movies to Windows changes the name and location of the files. We recommend that you store movies in the same folder with APW2.EXE, RUNAPW2.EXE, or the application that you're creating.

You may need to readjust paths for external files such as libraries and movies in the File Setup dialog box or using the SearchPath variable, discussed in *Using Variables & Functions*.

Note *Keep the original Macintosh files. Once a file is converted to Windows, you cannot open it on the Macintosh.*

7. APW prompts you to remap fonts.



You can remap all fonts, map all sizes of a particular font, or choose point sizes manually. The scrolling list box at the bottom shows APW's default font mappings, which are stored in the APW.INI file.

8. Run the file on Windows.

Compare the performance, timing, and appearance of graphics. You may want to modify to the Macintosh file and reconvert it.

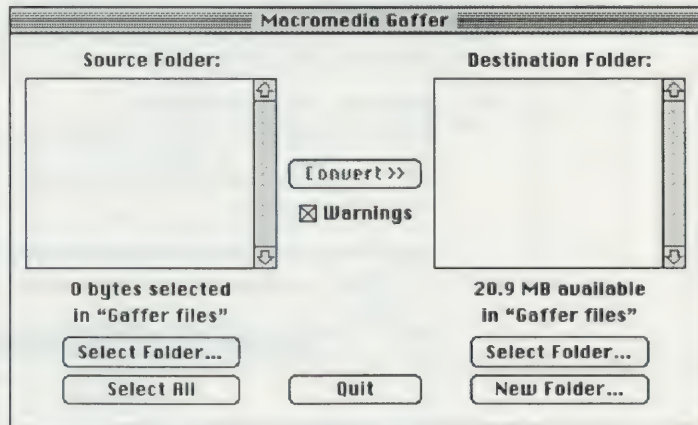
Converting Director movies to Windows

Authorware Professional for Windows supports playing Director movies by loading the converted movie in the Movie Options dialog box. To convert Macintosh Director movies to Windows format, use the Gaffer application, supplied with APW on the Macintosh Gaffer disk.

Note

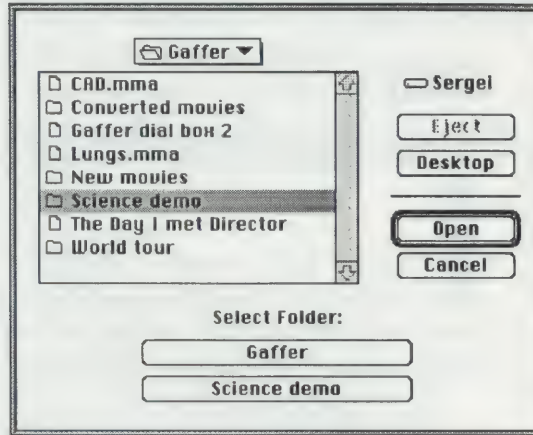
APW supports loading converted Director 3.1 movies; however unlike APM, it does not currently support interactivity created with Lingo, or any of the features added to Director after version 2.0. Use Director for animation; design interactivity in Authorware.

1. **Copy the Gaffer application from the Macintosh disk included with Authorware Professional for Windows to your Macintosh hard drive.**
2. **Double-click the Gaffer application to open it.**



3. **Click the Select Folder button on the left side of the dialog box.**
A directory dialog box appears.
4. **Select a folder that contains the movies you want to convert. Then click Open.**
When you select a folder, its name appears at the bottom of the dialog box. You can select multiple folders.

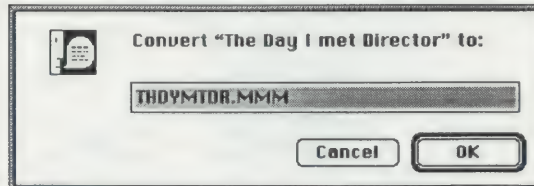
5. When you have selected a folder, click the folder name at the bottom of the dialog box.



The Gaffer window reappears.

6. Follow steps 3 through 5 to select a destination folder. The destination folder can be the same as the source folder.
7. Select the Director movie you want to convert from the scrolling list on the left.
8. Click the Convert button.

Gaffer converts the file, renaming it with a DOS filename. If you select the Warnings checkbox, Gaffer confirms the filename before renaming.



9. Repeat until you have converted all the Director movies.
10. Click the Quit button.

TIP

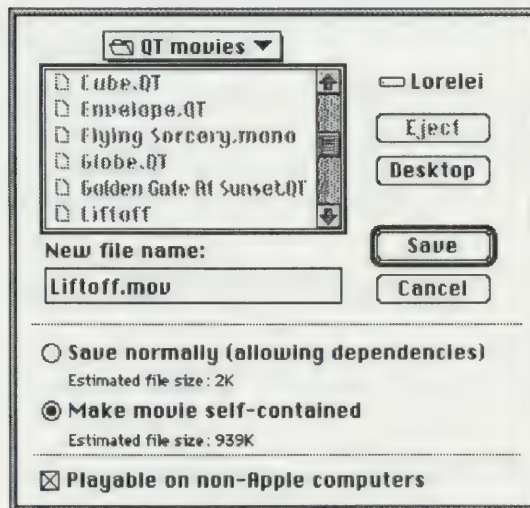
Gaffer needs at least twice as much memory as the largest castmember in your movie. If you have trouble converting a movie because of memory limitations, increase Gaffer's memory partition by selecting Get Info in the Finder.

Converting QuickTime movies to Windows

Before you import QuickTime movies into APW, you must convert them using the Movie Converter supplied with QuickTime.

1. **Open the Movie Converter application on your Macintosh and open the QuickTime movie you wish to convert.**
2. **Choose Save As from the File menu and give the movie a DOS filename.**

Movie Converter prompts you to rename the file. Use up to eight characters and the .MOV extension.



3. **Select "Make movie self-contained."**
This deletes references to external files and is sometimes referred to as "flattening."
4. **Check "Playable on non-Apple computers."**
5. **Save.**

The movie can now be imported into APW. The QuickTime driver (APQT.VDR) and the QuickTime for Windows DLLs must be in the same directory as APW or RunAPM, on both the authoring and delivery computers. Distribution of these files is subject to the licensing agreement of Apple Computer.

QuickTime for Windows 1.0 currently supports only the five compressors available in QuickTime for Macintosh 1.0. These are Apple Animation, Apple Graphics, Apple None, Apple Photo - JPEG, and Apple Video. For more information about QuickTime, consult the QuickTime documentation or Apple Computer.

Note *Microsoft Video for Windows includes a Macintosh utility that allows you to convert Macintosh QuickTime movies to AVI.*

Note *APW does not support changing the rate of playback for external movies. You also cannot play externally stored movies backward on Windows. These features are supported in APM.*

Guidelines for Macintosh authoring

Following are some general guidelines for authoring on the Macintosh for playback under Windows.

Anticipate environmental differences

Because the Macintosh and PCs are very different, you'll see variances in speed and performance even if you use approximately equivalent machines with similar clock speeds. It's important to test samples of your application on the target system while you are developing the application.

Be sure to author using a presentation window size that works for all delivery systems. The Macintosh File Setup dialog box includes window options for VGA (640 x 480), 800 x 600, and 1024 x 768, to use for applications that run on the PC.

Prevent undesirable color changes

When you convert an APM file to Windows, colors are mapped to their nearest equivalents. The results depend on the color palettes used on each platform:

- ◆ Macintosh 256-color palette to Windows 256-color palette—Expect a very close color match, since the color palette in APW mimics the Macintosh system palette. However if you create graphics in Windows applications that use the standard Windows palette (rather than the APW palette), there will be variations. Checking Preserve System Colors in the Color Palette dialog box provides exactly the same palette, but overrides any setting in the Windows Color control panel, resulting in variances for the color of window borders, buttons, and other interface elements.
- ◆ Macintosh 256-color palette to Windows 16-color palette—The 256 colors are mapped to their nearest equivalents in the 16-color palette. When you develop the Macintosh application, it's best to select Use VGA Palette in the APM File Setup dialog box.

- ◆ Macintosh 16-color palette to Windows 16-color palette—
Because the Macintosh and Windows have different standard color palettes, you will notice some color variations when transferring files. For nearest color matching, select Use VGA Palette in the File Setup dialog box on the Macintosh.

Effects

The Macintosh and Windows programs have slightly different display, erase, and interaction effects options—APM has five additional effects. It's best to use effects that are available on both platforms. When you convert an APM file to Windows, Macintosh effects are converted in the following way:

Macintosh effect	Windows effect
Zoom to point	Iris In
Zoom from point	Iris Out
Zoom to line	Remove Down
Zoom from line	Build Up
Fade in and Fade out	Mosaic

Limit use of custom functions

Macintosh custom functions (XCMDs and XFCNs) cannot be converted to Windows Authorware files. XCMDs and XFCNs must be reimplemented as Windows DLLs (dynamic link libraries).

Fonts

The Macintosh and Windows environments use different sets of fonts. If you're designing cross-platform applications, experiment with font mapping while you're authoring.

To simplify font mapping, Authorware automatically maps Macintosh font references to Windows fonts during file conversion. Font mapping selections are stored in the Windows APW.INI file, and this information is used whenever files are converted.

When you convert Macintosh files to Windows, Authorware maps fonts based on pixel line height rather than size. You can choose to have Authorware automatically convert Macintosh fonts to Windows fonts of equivalent pixel heights.

Each platform uses a different character set. Some special characters in APM files may convert to different characters in APW. Below is a list of Macintosh special characters to avoid and a recommended substitute:

Avoid	Use
• (bullet)	*
" " (smart quotes)	"
≠ (not equal)	◇
≤ (less than or equal to)	<=
≥ (greater than or equal to)	>=
... (ellipsis)	... (three periods)

Allow breathing room for text in displays in your APM files since the fonts in Windows and on the Macintosh are not identical. Avoid displays with tightly constrained text, such as text inside boxes. Center text inside a box and leave an extra margin in text objects to help compensate for font differences when you convert to Windows.

Outline and shadow styles are not currently supported under Windows. Text in these styles in your Macintosh file will be displayed in bold in your Windows file.

The most dependable of the standard fonts that ships with Windows 3.1 are the VGA-resolution Times New Roman and Arial. Avoid vector-based “stick fonts,” which are for use with plotters and display poorly. If you need larger fonts, or if your fonts must convert exactly to maintain placement on the screen, you may want to screen capture the text using a utility like SnapPro or Hijack.

Third-party vendors such as Adobe, Bitstream, Cassady & Greene, ZSoft, and Image Club specialize in fonts. Become familiar with their products. Font packaging is not supported under Windows 3.1 as it is in APM. If you choose a third-party font, remember that you’ll need to provide it on all delivery stations.

With Windows 3.1, you can use TrueType fonts for a more consistent font environment on both platforms. If you use TrueType fonts in your cross-platform applications, keep in mind that the TrueType fonts must be available on the authoring and delivery machines on both platforms.

PICTs

PICT format graphics are widely used on the Macintosh. However translating PICT graphics to Windows creates problems. Generally, if you are converting your Authorware applications to Windows, use bitmapped graphics. Although APW supports importing Macintosh PICTs, most Macintosh applications that save in PICT format have features that are not supported on Windows.

APM includes options to Paste as PICT or Paste as Multiple Objects to optimize PICT images on the Macintosh applications. However, since special effects such as spray can objects, grayscale gradients, or mask regions produce unpredictable results when converted to Windows, don’t import graphics as multiple objects or use the Paste as PICT command on the Macintosh. The Macintosh graphic will convert more cleanly to Windows.

If you have doubts about converting graphics files, import them into APM and convert the file to APW for a test run. You can also save the graphics with the .PIC extension and import them directly into APW. Do this before you have created intricate graphics with custom file formats that aren't supported on both platforms. Alternately, if you do a lot of cross-platform authoring, you may want to use a graphics application that is supported on both Macintosh and Windows, such as Aldus IntelliDraw or Adobe Photoshop.

Troubleshooting

APM file won't open on Windows because it uses too many icons

APM has a limit per file of approximately 32,000 icons, while APW has a limit of 16,000 icons, so if you create an APM file with more than 16,000 icons, it will not open on Windows. Break the APM file into smaller components. In general, you might want to limit files to 3,000 or 4,000 icons. This makes it easier to manage.

APM models don't convert

Although APW supports models, it cannot open APM models in version 2.0. If you have models to convert, you must paste them into APM files and convert those to APW and then create new Windows versions of your models.

PICT images don't convert correctly

If this occurs, open the original graphic on the Macintosh in the application that created it and convert the file to a bitmap. You can do this with a screen capture utility or using software like Aldus SuperPaint, which supports both PICT and Paint format graphics. Then reimport the file into APM and convert to APW, or import the graphic directly into APW.

Imported PICT graphics display with substituted fonts

Although APW maps fonts during conversion, font mapping is supported only for Authorware files. Font mapping does not affect PICT graphics imported into APW, so display text will automatically be converted to the Windows system font.

Underlined text differs from font to font

If you use underlined text in your APM files, you may not like the results when text is converted. On Windows, underlining depends on the size of the font, so the underlining for a 72-point word will not appear the same as for a 10-point word.

Font mapping converts size of font

Font sizes are mapped based on the line height in pixels. Because the screen dimensions for Macintosh and Windows can differ, APW attempts to maintain the vertical dimension of a font but may not preserve the original size. Font mapping information is stored in the APW.INI file. To reselect fonts, delete the APW.INI settings.

Scrolling text doesn't work

Although APW does not have a custom function comparable to ScrollEdit XCMD, the Windows application does support scrolling text. Select the text object and choose Scrolling Text from the Text menu.

White line displays on VGA monitor when converted from 13-inch Macintosh screen

Files created for 13-inch Macintosh monitors fit almost perfectly on a VGA display. However the default menu bar in Windows is one pixel smaller, so an extra pixel appears as a white line at the bottom of the screen. Set the background color in the File Setup dialog box so that the white line doesn't appear.

Movies don't use options selected in APM

External movies cannot have their frame rate adjusted in APW, nor can they be played backward.

Interactivity scripted with Lingo in Director is not currently supported in APW.

External movie conversion requires relinking because filenames are changed

If your APM file refers to an external movie, APW looks for the same filename. When you convert a QuickTime or Director movie, you generally change the filename of the converted file, adding an .MOV or .MMM extension. APW prompts you to locate movies when you first convert the APM file.

Sounds don't play

Macintosh computers have built-in sound capability up to 22 kilohertz. Windows computers must have a sound card installed in order to play back sounds in APW files. Windows 3.0 requires the multimedia extensions in order to play sounds.

Some Windows sound cards do not support speed changes in sounds. Test your sound card to see whether you can change the rate of playback; if you can't, use a sound editor to change the rate of playback before importing the sound into APW.

If your applications will run on PCs that may not have sound cards, include a visual clue wherever a sound plays. For example, include a balloon with the word "Honk" to replace a horn sound.

QuickTime movies that are composed only of sounds are not supported in QuickTime for Windows.



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